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RAIL-ROAD NEWS.

Government Railroad between New York and Washington.

A reform in the railway between New York and Philadelphia, under the constitutional powers of the General Government to establish post routes, is suggested by a writer in The Washington Republic, seconded by "Observer," the well known correspondent of the Philadelphia Ledger, and copied by the Trenton State Gazette.

The railroads of New Jersey as they are conducted have been the means of calling for this reform. If they were under the same enterprising management as those of New York and Massachusetts, and carried the mails with the same promptness and speed, the above suggestions never would have been cogitated.

The "Observer" spoken of above, advocates a government road between the political and commercial capitals of our country. We understand the subject is receiving a good deal of attention in Washington. We hope the subject will form itself into a veritable fact, not an ideality, not many days hence.

Cleveland and Sandusky Railroad.

The Junction Railroad between Cleveland and Sandusky City, is being pushed forward rapidly. About twelve miles of the road from Olmstead, west, are now nearly ready for the iron, and the substantial bridge over the east branch of the Black River, at Elyria, is about finished. The contracts for building the road west to Sandusky City, have been let, and the contractors are to complete their jobs by the 1st of Jan., 1853.

Cleveland and Pittsburgh Railroad.

The Cleveland and Pittsburgh Railroad is rapidly approaching completion. On and after Monday next, the regular trains will run from Cleveland to Hanover, a distance of 75 miles. The road will be completed to Wellsville by the 1st of January next.

The directors of the Genessee Valley Railroad, N. Y., have determined to postpone commencing its construction until next Spring, and in the meantime to take the necessary steps to secure the right of way.

Dangerous Railroad Bridge.

It is said that the Harlem Railroad bridge in the Fourth Avenue, between Eighty-fifty and Eighty-sixth streets is in a dangerous condition.

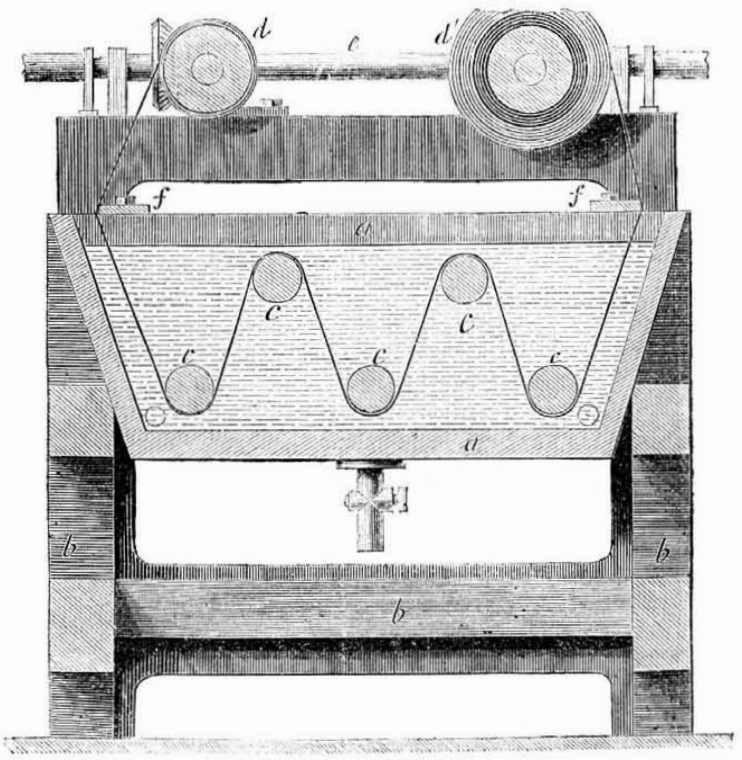
We hope this bridge will be rendered safe beyond doubt at once. Every railroad structure should be made safe to a certainty.

California.

By the latest news from California, we learn that gold is as plentiful as ever. There seems to be no end to the deposits, and the quartz rocks yield as much as the placers; a great deal of expense is incurred at first for powerful machinery, but it is very soon all paid for.

A diving bell has been employed with great success, for fishing for gold in the San Joaquin river: the gold is found in holes near the banks.

APPARATUS FOR DYEING CLOTH.

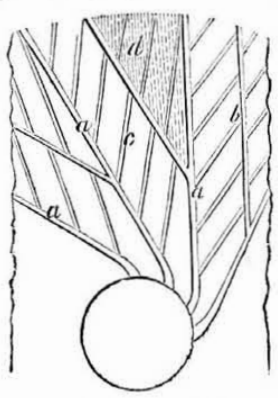


This invention was patented a short time since, in England, as we learn by the "London Patent Journal," to which we are indebted for our information on the subject of the two patents on this page. Presuming they would be of interest to many of our readers, as subjects not often treated on, and also as subjects from abroad, as we like to vary our matter, for our readers, we have got up the annexed engravings, arranged the matter, and described the subjects as suited to our columns.

The inventor of this improvement is Mr. J. Richardson, of Halifax, Yorkshire, England.

The engraving represents a sectional elevation of the machine employed for facilitating the dyeing process. It consists of a vat or cistern, *a*, for containing the dyeing liquor; this cistern is mounted upon a framing, *b*, and within the cistern are mounted the rollers, *c c c*, two of which are near the upper part of the cistern, and three of them near the bottom. Above the cistern are mounted the rollers, *d d*; the bearings upon which these revolve are in the end framing of the machine; these rollers are connected by means of toothed bevel gearing, to the horizontal shaft, *e*, but that connection is effected through clutch-boxes, so as to throw either of them into gear with the horizontal shaft, as required, and thereby give motion to either of the rollers. The two clutch-boxes are connected together, in opposite directions, by means of a rod, so that when one is thrown into gear, the other is thrown out simultaneously. The operation is thus: several pieces of the fabric to be dyed are sewn together, end to end, to make up the length required to be operated upon at a time; this is then wound upon one of the rollers, as *d*; the end is then passed under and over the rollers, *c c c*, in the cistern, and thence to the other roller, *d'*, to which the end is made fast. The fabric, in passing between the rollers, *d d'*, and the rollers, *c c c*, in the cistern, passes over the edges of fixed plates, *f f*, secured to the top of the cistern. The fabric being thus arranged in the machine, it is set in motion, the fabric being unwound from the full roller, and wound on to the other, until the whole is passed over, the fabric passing, in this operation, through the dyeing liquor in the cistern, and thereby becoming saturated with it. In most cases, passing the fabric once through the dyeing liquor is not sufficient to complete the process; therefore it may be again passed through any number of times required, and to effect this, when the whole is passed through, the clutch-boxes are moved, throwing one bevel wheel out, and the other into gear. By this, the rotary movements of the rollers, *d d'*, will be reversed, and the fabric immediately commence to return back to the other roller, passing again through the dyeing liquors, as before. Near the bottom of the interior of the cistern are placed perforated pipes, and through these steam is admitted, for the purpose of heating the dyeing liquor during the process. The invention is nearly like some plans in use here.

Dressing Stones for Grinding Wheat.



This is the subject of a patent recently granted to P. A. Le Comte De Fontainemoreau, of Paris. It refers to portable mills, and for a new mode of dressing the stones, which is thus described. The figure is an enlarged section of the stone to show the dressing.

a a a are the master furrows, and *b b* secondary ones, parallel to some of the furrows, *a*, at an angle, and coming into some of the others. A number of small parallel furrows, *a* and *b*, to the periphery, it being observed that the furrows, *c* and *d*, are not in the same line. The part of the stone between the furrows, *a* and *b* is further dressed, as shown at *d*. The result of this system of dressing is, that the air having free admission at the eye, double the volume will enter compared with the wheat ground.

New Kind of Skating.

At a large beer drinking house in Berlin, Prussia, the customers are waited upon by female skaters. The instant a customer takes his seat, one of the damsels darts from the end of the room, skims over the floor describing graceful curves, and in a moment is at his side, and requests to know his wishes. One of these female waiters will collect a number of orders in her round, or carry her beer vessels to her customers without ruffling their snowy froth. The motions performed resemble skating, and strangers are likely to be deceived, but the act is performed by employing small iron rollers let into the soles of strong but neatly fitting boots. This is all the mystery. It takes time and practice to execute the movements well, and the work is somewhat fatiguing. The floors over which they glide are made of smooth hard wood boards.

American and East India Cotton.

The Southern States of America have increased their shipments of cotton to England since 1800 from 16,000,000 to 600,000,000 pounds, while British India has but swollen her exports from 6,000,000 to 80,000,000 pounds.

As regards the progress of the supply of raw cotton in British India for local use and export to other countries, it is estimated in round numbers to be at the present day 450,000,000 pounds annually, of which fully two-thirds are worked up in the country for local purposes. Of the remaining one-third, China takes nearly one-half, leaving about one-sixth of the entire produce of the country at the disposal of Great Britain.

There are vast tracts of land in each of the three Indian presidencies capable of being brought under cotton cultivation, as also a dense population at disposal for working such lands, there appears to be little doubt; but the evidence before the House of Commons goes to prove that it is the quality more than quantity that is wanted, and as yet the East has not at all been able to compete with America in this respect.

Much has unquestionably been done in the way of improving the growth and preparation of Indian cotton; the East India Company has spent largely in importing seed, implements, and experienced hands from the cotton growing States of America, as well as in prizes for the best and largest samples of fine cotton produced within the presidencies, for shipment to England. In 1824, there existed a difference of 2d. per pound between the average price of upland American cotton and the average price of Indian cotton at Liverpool. In 1836, there was a difference of 3d. per pound in the same qualities, whereas since 1844 the difference between them has only varied from 3-4d. to 1d per pound.

So long since as 1788, the Court of Directors called the attention of the Indian Government to the cultivation of cotton in India, with a view to its encouragement.

Between 1830 and 1840, various new cotton farms were established, seed and machinery were introduced from the Brazils and Egypt, and an officer in the company's service was despatched to America for the purpose of collecting information, and experienced cultivators, with seed and implements.

In 1840, ten American planters arrived under the care of Capt. Boyles, and were in the following year stationed in various parts of the three presidencies, to test the practicability of applying the American mode of culture to the soil of India. To the present time these experiments have been continued with varying degrees of success. In the Doab, at Agra, and at Gorruckpore, the result appears to have been unfavorable; but elsewhere there is good reason to believe that, although no immediate and important improvement in the quality of the crops seems to have taken place, a better system has been gradually introduced.

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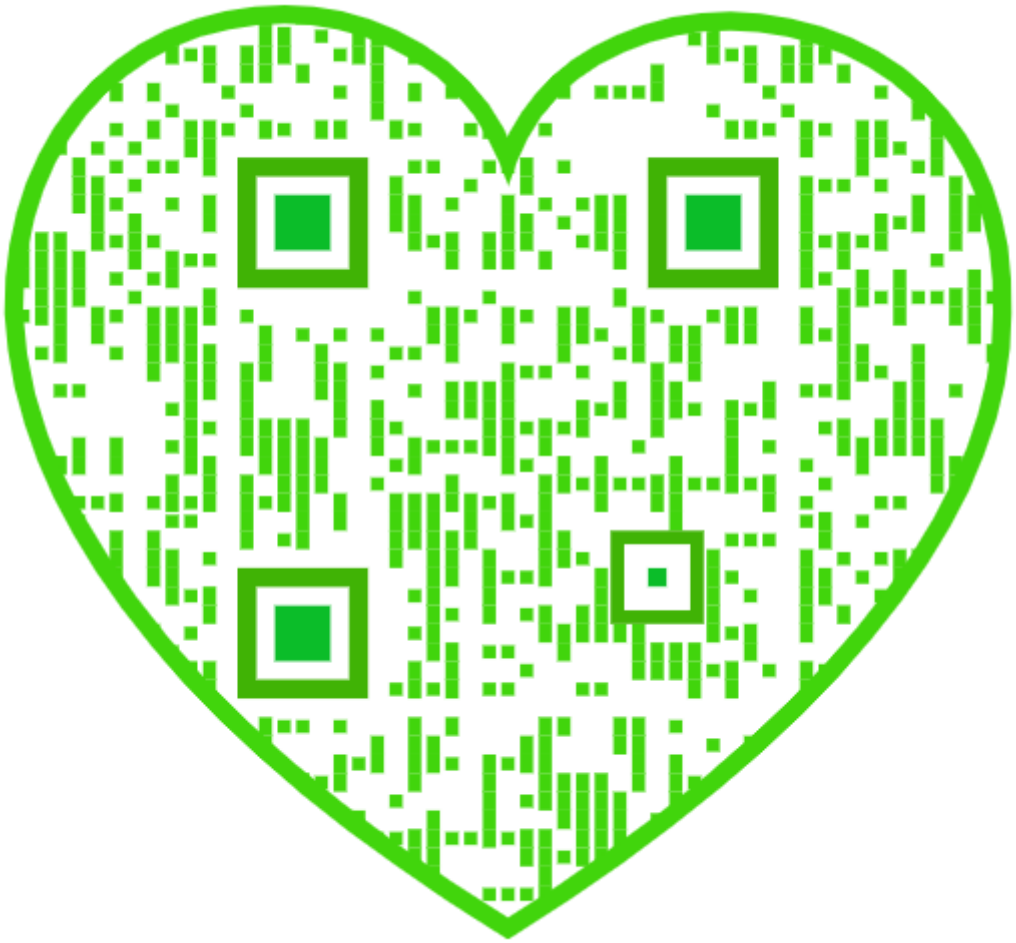

MISCELLANEOUS.

Coal of Massachusetts.

The New York Sun of last Monday contains a very interesting article from the Boston Journal, relative to the coal strata of Mansfield, Mass. It appears that borings for coal commenced there a number of years ago, but a shaft of only sixty feet depth was sunk, and the result was unsatisfactory. A coal and mining company for prosecuting further researches was chartered in 1849, and the summer of that year the right to mine forever under more than 1,000 contiguous acres was secured, and three holes were bored perpendicularly through the stratification, which showed the existence there of several coal beds. Subsequently, an excellent fifty horse power engine was obtained and a good substantial building erected over and around it. An efficient pump, double acting, and of 12 or 13 inches in diameter, was also obtained.—Thus well furnished, the work of striking a perpendicular shaft of ten feet in diameter was commenced nearly two years ago, and at the end of about one year, had been sunk about 170 feet, but without finding as much coal as the calculations predicted. One bed of coal, however, was cut, from which the company has obtained all the coal that its own engine has required for the past year, say a little short of one thousand tons.

In the autumn of 1850, downward operations were stopped, and tunnelings from the shaft, at 160 feet below the surface were commenced. There are now two of these tunnels —one leading northward, which has been driven from 175 to 200 feet, and has cut several beds of coal, but not one of them thick enough to pay for working out. The tunnel leading southward has also cut several beds of coal, but not large enough to work at a profit. At the rate of something more than 30 feet per month, this tunnel has been excavated more than 450 feet, at a heavy cost. But at last, near the end of October, it opened on a bed, which thus far promises to be from six to eight [illegible]ckness, and to furnish an abundance

It is expected that the company will soon be able to bring plenty of coal into the market, and pay off all expenses. The expenses already incurred amount to nearly $200,000, the whole capital. The coal is anthracite and red ash. We cannot but notice the great benefits of large capital in enterprises like the foregoing. Here it seems that great difficulty has been experienced in getting up a company in Massachusetts of $200,000, and all it has done is to sink a shaft of about 32 fathoms. Why it is a common thing for a single English capitalist to sink a shaft of three times that depth, a seam of 4 feet in thickness, is counted not a bad reward. We must live and learn about these things.

The Carysfort Iron Light House, Florida Reef.

This light house is now nearly completed. The reef selected for the site of this light house is about 85 miles east from Key West, and nine miles from the nearest land. A more desirable location cannot be found, as it stands on the most eastern shoal of the reef, near what is called the Elbow, and within half a mile of the unfathomable waters of the Gulf Stream. The entire structure is of iron. The plan of the base is octagonal, consisting of eight angles and one centre pile of wrought iron. These piles, 25 feet long, and eight inches in diameter, were driven by blows of a ram weighing 2,000 pounds, into the solid coral bank, until an iron shoulder attached to the end of each, brought up on dirks which have a large bearing surface, and through which they were driven. These piles are imbedded ten and twelve feet below the surface, which is coral rock and sand. The structure is composed of a series of iron pillars, the lower of which stands perpendicular, being ten feet above high water mark. Upon the heads of the lower tiers are cast iron sockets, or coupling boxes, in which are placed the heads of the second series of pillars, departing from the perpendicular at an angle of 10¼ degrees, thus narrowing the building as it rises, and presenting the frustum of a cone, with a base fifty feet in diameter. About forty feet above high water mark, the pillars are inclosed by two rows of cast iron plates, inside of which are laid two floors, and the whole covered in with a roof. The lower of the rooms thus formed, is intended for water and stores, while the upper serves as a dwelling for the keeper. From the roof of these rooms ascends a cylinder tower, inclosing the stairway to the watch room and lantern. The height of the entire structure, that is from the heel of the centre pile to the silvered ball above the lantern, is 128 feet. The light, which will be revolving, it is calculated can be seen 30 miles—the atmosphere being sufficiently clear for it to penetrate that far. In addition to the radial and periphery ties, or braces, by which the centre and angle piles are attached to each other, the whole is secured by tension bracing, tightened by a lever and turnbuckle, which make it perfectly tight. An ornamental gallery is arranged around the dwelling house, giving it a light and airy appearance.

Science of Gunnery.

In the new edition of Sir Howard Douglas's work on Naval Gunnery, he attributes the success of the Americans at sea during the last war, not to better firing but to superior guns. He says:—

"When we came into collision with the Americans, our equals in seamanship and courage, and, at the period alluded to, our superiors perhaps in gunnery, and certainly in ships, we speedily discovered that headlong uncalculating courage was not alone sufficient to insure success. In the action between the United States and Macedonian, Decatur, conscious of the superiority of his long 24 pounders over the 12 pounders of the Macedonian, pelted the enemy at a long shot distance for an hour, and the British court-martial on Capt. Carden found 'that the Macedonian was very materially damaged before close action commenced."

Sir Howard Douglass regards with distrust, the introduction into British ships, to the extent to which in some instances it has been carried, of Paixhan and other French shell-guns, as yet untried in actual combat in broadside batteries. This description of guns he considers not well adapted for action, either at great distances or at close quarters, and is of opinion that ships chiefly so armed will stand little chance against a distant cannonade of solid shot guns owing to the superiority of the latter in respect to power of range, accuracy in distant firing, and penetrating force. These, after all, are the great requisites, particularly for steam warfare; and commendable caution is exhibited in our own service in restricting the number of Paixhan guns to a proportion having reference to the probable occurrence of the exigency in which they may be used with most efficiency.

During the World's Fair, a great number of experiments were made in England. An iron rifle cannon, to be loaded at the breech, for the purpose of firing cylindro-conical and cylindro-conoidal shot, invented by Major Cavalli, a Sicillian, and Baron Wahrendorf, a Swede, attracted most attention.

It was tried with a British 32 pounder, and at high elevations was very superior, but not at 5° or below that.

An Iron Mountain.

There is a mountain of very pure iron ore near to Lake Superior; it lies three miles from the lake shore. It exists there in such abundance, and is of such an extraordinary quality, that, in a late report of United States' geologists, this prophecy was made in regard to it. Says the report:—"This region possesses an inexhaustible supply of iron ore of the best quality, removed from twelve to thirty miles from the lake shore, with the soil by no means sterile, and covered with a heavy growth of maple, yellow birch, pine, and oak; and it is to this source that the Great West will ultimately look for the finer varieties of bar iron and steel."

M. Thevelin, a Frenchman, in performing a balloon ascension at Brussels, Belgium, in crossing the city, got foul of the statue of St. Michael, placed on the spire of the City Hall of Brussels, and in order to save himself, clung to the statue immediately, while his apparatus was carried off by the balloon; he then proceeded, as his only means of salvation, to descend to the ground, the spire being 360 feet in height, and by dint of extraordinary presence of mind and bodily activity, he got down in safety.

New Water-Works at Albany.

The people of Albany, N. Y., have exhibited a great deal of spirit and enterprise in forming their new Water Works. Two artificial lakes were constructed during the last summer season. They are about two miles from the city, on the Schenectady Railroad, and are called the Watervliet Lakes. The Albany Register says they are formed by the waters of the Patroon's Creek; the upper or receiving lake covers ten acres of ground, and when full contains 60,000,000 gallons, the lower, or settling lake, thirteen acres, and contains 70,000,000. Two dams have been used in their construction, the one forming the receiving lake being 27 feet high by 440 long, and the one at the foot of the lower lake 28 feet high and 400 long. From the upper lake runs a canal 1,000 feet in length, which carries off the surplus water, furnishing it to the mills below, and from which, by means of a gate at its head, the lower lake is supplied. This canal is a fine piece of work, and an attractive feature of the place.

From the lower lake the city is supplied; the gate house is furnished with two gates, but, thus far, one has been found amply sufficient to furnish all the water required.

The base of the canal above spoken of, being two feet below the level of the upper lake, nothing but surface water is supplied through it to the lower, and from this again nothing but surface water is drawn, guards being placed before the gate house to within two feet of the top of the lake, so that the very purest of the water is alone what is received. The lakes are 144 feet above mean tide at full basin. They were commenced about the 1st of April, and finished on the 22nd of October, at a cost of about $30,000. Some 35 to 40,000 yards of excavation have been required, and near 100,000 yards of embankment.

The able engineer under whose management the work was performed, was Mr. W. McAlpine, the State Engineer elect.

Electro-Magnetic Traction on Railways.

It is well known that when the rails of a track are wet, the driving-wheels of the locomotive slip, and as a consequence, the train can move but very slowly, or not at all. To provide a partial remedy for this evil, the track is dusted with a sand-bag, whereby the wheels obtain a bite—greater tractive power—on the rails. An invention of a peculiar kind, to give the wheels greater tractive power, has lately been brought out in Europe, by a German named Nikles. His plan is to convert the wheel of the locomotive into a magnet, and make it stick to the iron rail by a like adhesion. This he does by placing a galvanic battery under the body of the engine. A wire coming from the poles of this battery is then coiled horizontally round the lower part of the wheel, close to the rail, but in such a way that the wheel turns round freely within it, fresh portions of its circumference coming continually into relation with the coil. The part of the wheel in immediate contact with the rail is thus made magnetic, and therefore has a strong adhesion for the surface along which it moves, and the amount of the adhesion may be increased or diminished at any time, by merely augmenting or reducing the intensity of the galvanic current that circulates through the surrounding coil. By means of a handle the electricity may be turned on or off, and an effectual break be thus brought into activity that can make the iron rail smooth or adhesive according to the requirements of the instant, and this without in any way interfering with the free rotation of the wheels, as the friction breaks of necessity do. The lower portion of the wheel, for the time being, is in exactly the same condition as a bar of soft iron placed within a coil of wire circulating electricity. But as it rises up out of the coil during the rotation of the wheel, it grows less and less magnetic, the descending portions of the opposite side of the circumference acquiring increased magnetic power in like degree.

M. Nikles' experiments (says Chambers' Journal, have been made with large locomotives in full operation; and he states, as the result, that the velocity of the wheel's motion does not in any way affect the development of the magnetic force. He finds the condition of the rail, as regards wetness or dryness, to be quite unimportant to the success of his apparatus, and he has already managed by its aid to achieve an ascent as rapid as one in five.

Furnace Bars.

At a recent meeting of the Society of Civil Engineers, Paris, M. Polonceau gave an account of a paper of M. Arson, on a furnace bar of a new shape, made of two common bars melted together so as to form only one piece, by contact at their ends as well as in the middle. The hollow between the bars is one-third of an inch, the thickness of the bars themselves being one-half of an inch; but the hollow may be brought down to one-quarter of an inch, for the same width of bar. He observed, that experience has shown the advantage of making the bars thin, and their intervals narrow, which allows the air to be spread more uniformly among the burning heap, and stops the small coal from falling through the bars. These bars have the evil of getting out of shape, but M. Arson's plan overcomes this. The only hindrance to the new plan of bar is in the moulding, but M. Arson, has been successful.

It was observed that on the Northern Railway they had given up cast iron bars for the fixed engines in the workshops, because they get out of shape and become very rough. These have been replaced by wrought iron bars, costing about 2d. a pound, being double that of cast iron, but last twice as long, and when no use, for bars, saleable as old iron.

One of the members supported this observation, but said the cost of the bar was 1¼d. a pound. The maker is furnished with ends of rails reckoned at ¼d. a pound; and he gives weight for weight of finished bars at 1d. per pound for workmanship. When he is supplied with old bars used up, he requires 125 lbs. of old iron for 100 lbs. of new furnace bars which brings the price up to 2d. a pound. It is found worth while to work up the old iron in this way.

It was remarked that coal burns wrought iron more than cast, but that it was not so with coke.

A member recommended the employment of bars of which the ends are bevelled on the upper edge, which prevents misshaping by unequal heating. These bars have been used with advantage in several works at Douay, being on a similar plan to locomotive bars.

Another member said he had tried the double bar of M. Arson. These bars were half an inch thick with half inch openings, and they were used in a furnace worked with coke. The combustion was better, but at the end of some time the bars were so misshapen by striking off the clinkers, that he was driven to change them and go back to the old bars.

These gentlemen do not appear to be acquainted with the grooved American furnace bar.

The imports and exports of the United States, for the year ending June the 30th last, according to the Journal of Commerce, are:—Imports $210,000,000 exports $188,000,000, excess of imports $22,000,000. The year previous the imports were $178,138,318, and the exports $151,898,712, showing an excess of imports for that year of $26,239,606. The excess for the last year is less than the year previous by four millions of dollars.

Atmospheric Churn Case.

We notice that the decision of the Commissioner of Patents, in the case of interference between J. O'Neil and Wm. H. Berlew, on the Atmospheric Churn, was decided on the 4th inst., in favor of Mr. O'Neil. The case, we believe, was a clear one.

The Great Western Railway of Canada West have decided to adopt the compound rail (patented by J. F. Winslow, Esq., of Troy,) for the entire line of 228 miles; and the order for the iron has gone to England.

Paxton, the designer of the Crystal Palace, is to receive, in addition to his knighthood, the sum of £5,000. Other amounts are to be given to other persons engaged in getting up the Great Exhibition.

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Fire Annihilator Experiments.

It becomes a part of our business, as conductors of a scientific journal to combat errors in science and expose bad inventions. Our readers are in the habit of looking through these columns for information touching the progress of the practical arts. We have never been slow to speak our honest convictions about every alleged new discovery, especially when reason and experience have been instrumental in leading us to a correct knowledge of the thing discussed, and we have reason to believe that many of our readers have profitted pecuniarily by our frank and undisguised opinions. Since the commencement of our present volume, we have freely and unreservedly spoken of the Fire Annihilator in the face of a powerful management and popular names. We are willing to be thoroughly tried upon such statements as we have advanced, and abide the result. We now bring forward a few proofs, in order to show our readers whether, under all circumstances, they would be willing to trust the virtues of the Fire Annihilator in preference to the old-fashioned method.

We wish it distinctly understood that we regard Phillips' Fire Annihilator, as illustrated and described in No. 1, Vol. 7, of the Scientific American, as an inefficient contrivance for extinguishing fires. The description there given is taken from an official copy of the specification and drawings furnish from the Patent Office. In the year 1850, before the present board of managers had any idea of such an invention, and perhaps before the General Manager had ever heard of it, a previously arranged trial of the Annihilator was made under the managerial auspices of Mr. Phillips, at Battersea, in London, not more than four miles from Charing Cross: a quantity of shavings was ignited in an apartment of a six-roomed house, and, at the expiration of *three minutes*, annihilators were simultaneously applied at the back and front of the building, both internally and externally. Several men remained in the house the whole time, applying the portable annihilators, of which *eleven* were used. Access was provided to the interior of the house by a ladder to the roof, unperceived by the bulk of the spectators. Two powerful annihilators, on four-wheeled carriages, were placed, one in front, the other behind the building; to the first were affixed two lengths of canvas hose, terminating in two iron pipes, for directing the gas into the interior of the building. The operations commenced, and before the charge of the first machine was expended, the heat of the effluent gas destroyed both the canvas pipes, and the machine was placed *hors de combat*. In one or two places, after the flames had got hold of some wood-work, they were not easily beaten off, and a handful of fire in a corner of the ground floor front gave Phillips' men much trouble, and finding the Annihilator did not answer the purpose, they at last resorted to a plentiful application of water with the best results—forty-five minutes having elapsed from the time of ignition before the building could be safely left. It is calculated that six buckets of water, in six minutes, would have put out the fire. The German correspondent of the London Globe, under date of October 3d, 1851, says:—"At Hamburg an experiment has been made with 'Phillips' Fire Annihilator.' A wooden shed, filled with combustibles, was set on fire, and an attempt made to set the 'Annihilator' at work; but the heat was too great to permit of approach; a fireman was near becoming a victim of the experiment, and at last it was found necessary to use a common water engine, which extinguished the flames in ten minutes. At St. Louis an experiment was made about the same time by Messrs. Gray, Davenport, and Lewis, when a two-story frame building, sixteen feet by twenty, was destroyed, although the arrangement was expressly made by the owners for the purpose of convincing the public of its potency and utility. The operator escaped from the burning mass with his clothes considerably scorched. At a later period, when the building was well nigh consumed, a small machine was brought in requisition, but the effect upon the flames was so trifling as to be barely perceptible, and the building finally burned to the ground. An experiment for testing its powers was made on the 8th inst., at Bordentown, N J. The Fire Annihilator was purchased by the Camden and Amboy Railroad Company, who were desirous of introducing it in some parts of their works and stations, in case it should prove effective. To give the Annihilator a fair trial, a small house or shanty was erected, about nine feet long, six feet wide, and seven feet high It was without openings, except that a part of one end was not wholly closed. The interior was about half filled with pieces of boards and shavings. The fire was kindled, and in a few moments afterwards the Annihilator was put in action. At first it seemed decidedly to deaden the flames, but they soon gained the ascendency, and the building was rapidly destroyed. The stream of gas lasted not more than three or four minutes, and it was evident that it would have required several machines to subdue even so small a fire.

At New Rochelle, on the line of the New York and New Haven Railway, we learn that an experiment was made by setting fire to a two story wooden house. The result was, that the building burned down. The particulars of this experiment have never appeared in the public prints, but that it took place, and was unsuccessful, we have abundant proof. All these experiments were made with "Phillip's Patent Fire Annihilator," and in view of them, we must say that the newspapers have taken a most indulgent view of the apparatus. One year since the English press were almost unanimous upon this point, "that while the invention is well adapted for special circumstances, it would avail little or nothing against a large and open conflagration."

The tests above cited go very far to contradict even this point, and we shall beg to be enlightened on the meaning of "special circumstances."

We now hope, when Mr. Phillips reaches New York—we understand he is expected—that he will show us all that is claimed for his invention by the American Board of Managers. Don't set fire to a building; such work is unnecessary, and will not satisfy an intelligent public.

Now, gentlemen, if the Annihilator fails under prepared circumstances, what may we reasonably expect it to accomplish when brought to an accidental fire?

The materials used in the Fire Annihilator, to quench flame, are steam, carbonic acid, oxide, and some nitrogen gases. Dr. Colton blunderingly explained, that the reason why steam was so good for quenching fires, was because of its low heat, 212°, that being about 1200° less than flame; thus presenting an overwhelming argument in favor of water at the freezing point. The gases of the *brick* in the Annihilator, are the very same as those generated by powder. Powder is composed of 75 parts nitre, 15 charcoal, 10 sulphur. Powder, when exploded, produces carbonic oxide and acid, sulphuric acid, and nitrogen; the sulphur is chiefly used for increasing the rapidity of the action, Now, in the materials used in the Fire Annihilator, pure sulphur is not used, but the sulphate of lime in its stead (gypsum). The materials of the Annihilator, then, just form a slow powder. Dr. Colton stuttered not a little in explaining what kind of gases were evolved by the materials; he intended to impress the audience with the new fact, that there were other gases than carbonic acid evolved, and those *not so dangerous to inhale*,—every chemist knows, that the mixed gas of gunpowder acts at once on both lungs and thorax, and is more virulent than pure carbonic acid. We venture here to say that a good charge, fired into a close room, by a holster pistol, will produce a more sudden effect to quench a fire than a charge of a twenty-dollar Annihilator. A cubic inch of powder, when fully ignited, expands to two thousand, and this so suddenly, that a vacuum is formed, a collapse (not enough to hurt much by mechanical force) is the result, and this at once will extinguish the flame.

It is well known to men of extensive information, that naturalists have oftentimes charged their muskets with powder and water, in order to kill birds so as to preserve their plumage. A full description of doing this will be found in "Valliant's Travels,"—this is the principle of Phillips' Annihilator. We admit that Phillips' machine is a clever contrivance, but the gas to annihilate flame is notnew.

Abstract of Recent Foreign Inventtons.

Coloring.—Mr. John Robertson, chemist, London, has recently secured a patent for a new method of fixing colors on cotton fabrics. The first part of his invention relates to extracting coloring matter from madder. The madder is first converted into garancine, and then washed until all traces of sulphuric acid are removed. It is then dissolved in a hot solution of 10 lbs. of alum, and 1½ lbs. sulphuric acid in ten gallons of water. When this solution has cooled, the color is found in deep orange flakes, which are separated by filtration, and then washed until free from acid, after which the same liquor can be used over again for the garancine, by the addition of a little more new liquor to bring it up to the proper strength. The cloth to be printed on is prepared by a brief Turkey-red process. The liquor employed consists of 5 lbs. of white soap, 5 lbs. galipoli or olive oil, in 10 gallons of water. The cloth is padded in this, squeezed or wrung out, and hung up free for 24 hours in a warm room; it is shitted in position during the drying process, to let the oil combine and oxidize evenly in the cloth. After this the cloth is rinsed in a solution of 1 lb. of soda, dissolved in 20 gallons of water, and again dried, when it is in a fit state to be ready for printing. It is first printed with a color made up of 10 parts, by measure, of the dry madder extract, described before, and one of the acetate of alumina of 25° strength in Twaddle's hydrometer; this is thickened with gum tragacanth; after the cloth is printed with this, it is hung up for a few hours, after which it is steamed in the usual way, at as low a pressure as possible. The cloth is afterwards rinsed either in soda lye or soap—it produces a beautiful rosy color. By substituting the acetate of iron for alumina, a beautiful madder purple is produced.

Another part of this invention consists in a new liquor for clearing madder whites. This part relates only to the dying of cotton cloth with madder. He pads the cloth in a liquor of the hypochloride of soda in strength 10° 15 gallons or parts to 85 of water, for clearing up the whites in place of so much soaping used by the present processes.

By treating madder for four or five hours in water heated to 125° Fah., the soluble coloring matter is converted into alizarine, and fermentation will commence. When fermented, the matter will take a great deal less time to combine with the cloth, than using fresh madder. Time and fuel may be economised by treating madder in this way.

Alkanet Root Color.—Mr. Johnson obtains a beautiful topical color from alkanet root, by digesting it in the oil of turpentine, and adding one-eighth, by measure, of caustic baryta; the baryta separates the coloring matter from the turpentine, and forms a deep indigo mass. This is prepared as a color by mixing it with gum tragacanth. The cloth for it is prepared with the Turkey-red preparation described for the madder, and is printed on with the acetate of alumina as a mordaunt, or the alumina may be mixed with the alkanet root, like the madder color described; this is said to form a splendid purple color which will resist soap and alkali. This is worthy of the attention of our calico color makers and our dyers. They should try the experiment. No purple on cotton equals the alkanet root, but it has never been made so as to resist the action of soap, which turns it into a blue.

Indigo.—Mons. Victor H. L. Guillouet, a French chemist, has recently taken out a patent for deepening the shades of indigo. The principle of it consists in treating fabrics, dyed with indigo, with steam at an elevated temperature. Indigo is a substance naturally insoluble, and in order to fix it as a dye, it must be treated in some way to make it soluble. The sulphate of iron and lime are used, too, for this purpose, in the cold blue vats, and by immersing cotton or linen in the liquor, various shades of blue can be given, by repeated dips of the goods, in vats of various strengths. Indigo is also volatile, and this is one of its peculiarities, it is this principle which the inventor, takes advantage of by treating dyed fabrics in an elevated temperature of steam, in strong tight metal vessels, so as to make the indigo amalgamate with the fibres of the cotton, and produce a change in their physical constitution. The form of the steam vessel is immaterial, only it must be strong, and have a safety valve. The dyed fabrics of any shade of blue are placed in layers on a wooden framework, and enveloped in a blanket to prevent contact with the sides of the vessel, and the steam is admitted, varying in pressure from three to six atmospheres (90 lbs.). After the expiration of half an hour, the cover is taken off and the goods removed. After they are sufficiently cool, they are fit to be folded and packed. It is stated that this steaming imparts to the indigo color a violet tinge, and if the goods are calicoes, the other colors are not injured, but are made brighter in shade. The cloth thus treated shrinks greatly in length but not in width, it assumes a finer texture, is thicker, and much softer. This process is the same as that employed for *raising up* "spirit," colors in calico printing. We have never known of its being employed for common colors. It seems that it is as applicable for cotton yarn as cloth. Some of our dyers can easily try the experiment. It is stated to be a very excellent improvement.

Rotting Flax, &c.—Mr. D. F. Bower, of Hunslet, Yorkshire, England, has recently taken out a patent for a new improvement in treating flax. By the old process, flax, after being pulled and cleansed from seeds, is steeped, as usual, for some weeks in water, to remove the glutinous and other matters contained in the plant. The plan, of Mr. Bower, is to steep the flax for three days in hot water, or in cold for six, and then pass it between squeezing rollers to remove the glutinous matter. This process is repeated a second time, and the flax is afterwards scutched in the ordinary way. For finer qualities of flax it is submitted to the action of the chloride of soda, about 1 lb. of which is dissolved into every 150 gallons of water in the steep, and this—the steep—kept at 90° for about thirty hours. After this it is pressed between rollers again. This is one process of the patent. Another is, to put the pulled flax in an air-tight vessel, and extract all the air therefrom by an air-pump, after which a liquor made up of the sulphate of soda (glauber salts), 1 lb. dissolved into every 150 gallons of water, is let in and the mixture kept at the temperature of 90° Fah. After remaining in this for 24 hours, it (the liquor) is drawn off, and the flax submitted to a second like process in fresh liquor. After this the flax is laid up in a heap to cool gradually, without fermenting, after which it should be spread out to dry, when it will be ready for breaking.

Mangel Wurzel Coffee.—Mr. T. Huchvale, of Oxfordshire, England, has recently taken out a patent in England for making coffee out of this common root, for a coffee substitute, and for a tea substitute also. For coffee he cuts the root in small pieces about the size of coffee beans, and then roasts them like coffee, after which they are ground in the usual way. For tea, the leaves alone are used. These are denuded of their stems, and heated on plates, when they curl up, and after being perfectly dry are fit for keeping. They are used exactly like tea. There can be no doubt but what they are just as good for ths system as tea or coffee, but then they can be made too cheap, and, pshaw! it would be too vulgar to use such stuff. "Far off fowls have feathers fair,"—we place the highest estimate on that which costs the most, however foolish or useless it may be. This we believe is the case with both tea and coffee.

We are indebted to our invaluable exchanges, "Newton's Repertory of Arts," "Patent Journal," "Mechanics' Magazine," and other London Journals," and to the "Genie Industriel," &c., of Paris, for the above, in substance. Our chemists will at once see that we have sources of obtaining information, and of selecting it so as to present it clearly, retaining all the sense, detecting errors, and making all plain. No other journal in our country, without any boasting, has the same advantages, in those respects, as we have.

An Englishman observed a stone roll down a staircase. It bumped on every stair till it came to the bottom; there, of course, it rested. "That stone," said he, "resembles the national debt of my country; it has bumped on every grade of the community, but its weight rests on the lowest grade."

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NEW INVENTIONS.

Burglars Alarm.

Mr. William H. Horton, of Jersey City, N. J., has invented and taken measures to secure a patent for the most simple and best Burglars Alarm that we have yet seen. It is simply clock work so arranged and combined with an alarm bell, and a small hinged lever, that the said lever, being slightly pushed by the opening of a room door, will set the alarm bell free, to arouse the sleepers in a room, and defeat the objects of midnight marauders. The apparatus is so neat and small, that every traveller can carry one in his portmanteau, or in his hat or coat pocket. It is made to be secured on to the frame of a room door, which can be done in one minute, and it can also be taken off in as brief a space of time. Persons travelling with valuable articles in their pockets or carpet bags, will find this instrument to be one of the most useful and desirable inventions ever brought before the public for their protection, and it is equally valuable for every householder. They can be made of different sizes, and are not expensive. A very good size made of brass will cost only about one dollar, it is therefore an improvement within the reach of every person to purchase.

New Plumb and Level Indicator.

Mr. Samuel Reed, of Rising Sun, Cecil Co., Md., has taken measures to secure a patent for an improved instrument of the nature set forth in the caption above. It is strictly a mechanical Level different from the "*spirit one.*" It consists of an index pointer, which by the greater weight of one point, and by turning on a pivot, tells by a dial the true horizontal position of any object on which it is placed, and it also indicates the inclination or number of degrees which the object plumbed, may be out of line. It is a very useful instrument for architects and builders.

Improved Railroad Car Brake.

Mr. James Davis, of Schuylkill Haven, Pa., has invented and taken measures to secure a [illegible] improvement in brakes for cars [illegible]cles. The improvement con[illegible]ting the band of a brake with a [illegible] about its middle part, and hanging [illegible] either end, in such a manner that the brake is brought to act evenly upon the periphery of the wheel, so as to produce a direct strain upon the axle: the common brake arrangements throw an uneven strain upon the axles.

Tilton's Improvement in Violins.

The improvement in violins invented by Mr. Tilton, of Carrolton, Ala., and noticed a short time since in our columns, has been submitted to the greatest performers on the violin, and other eminent musicians in our city, and by them has been fairly tested. The result is, that a large meeting of the musicians was held at the Apollo Rooms on Wednesday last week and a resolution passed stating that the improvement of Mr. Tilton rendered the tones of the violin clearer, fuller, and more mellow.

Newly-Invented Mortising Machine.

A very ingenious rotary mortising machine has been put in operation at Hardwiss' Sash and Blind Factory, No. 8 Branch street, Philadelphia. It consists of a circular saw, so constructed as to make a perfectly true, square, and clean mortise of any dimensions, in either hard or soft wood, and complete the work in about the time required to remove the chips of the ordinary machinery. The operation of the machine is effected by placing the board edgeways upon an iron bed, which is balanced above the saw by weights suspended on either side of the frame-work. The bed is moved downwards, and by this process the saw passes through an opening in the bed and is brought in contact with the wood, through which it cuts instantaneously. The mortise can be increased to any size, by a repetition of the same operation. Steam power is applied to this machine, and much time and labor is saved by its use in this description of mechanical work.—[Exchange.

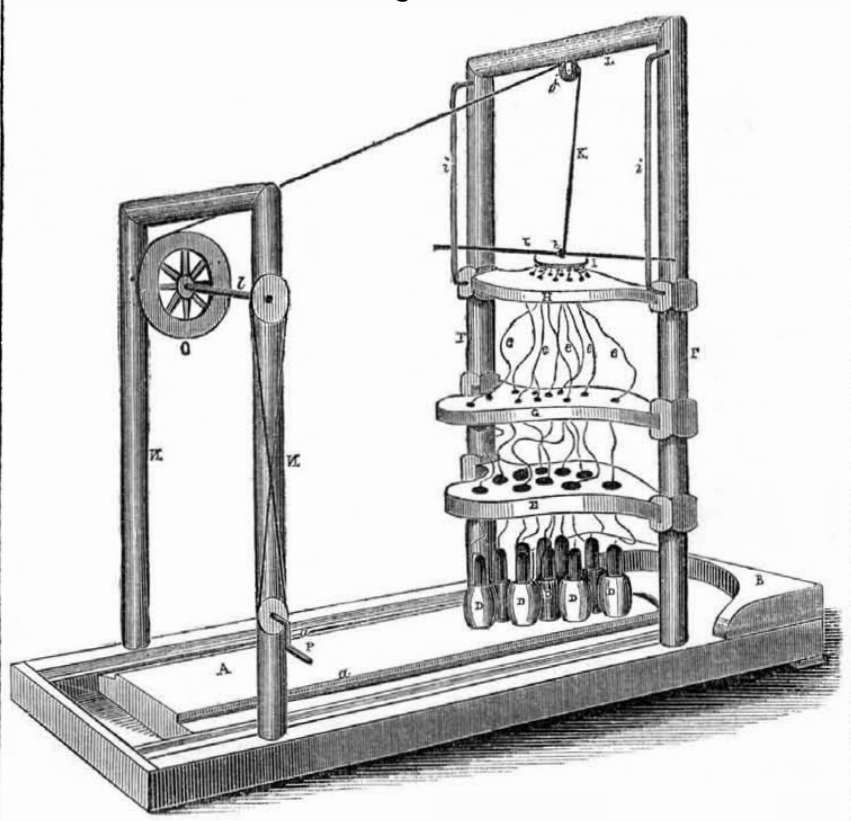
[We cannot see how a circular saw can cut out a square mortise, nor a clear rectangular mortise without passing through the board entirely.

New Etching Liquor for Copper-plate Engraving.

M. Kobell, of Munich, has discovered a new etching liquor for copper-plate: it is made by dissolving some thin iron turnings in hydrochloric acid, and adding to this solution a hot aqueous solution of hydrochlorate of potash until the liquor assumes the color of pale beer, and gives a reddish brown precipitate by the addition of ammonia. This solution is then diluted with weak hydrochloric acid, and the liquor thus prepared may be kept in a good conditiod by adding to it from time to time, a hot solution of the hydrochlorate of potash. As an etching liquor for engravers, the chloride of iron acts by giving up its chlorine to the copper, and changing into chlouret of iron. The liquor, after being used, contains chlouret of copper, which the hydrochlorate of potash converts into chloride of copper; this is as good for an etching liquor as the chloride of iron, since it again is changed into chlouret by the copper, &c., as in the case of the iron.

IMPROVEMENT IN BALL ALLEYS FOR RECREATION.

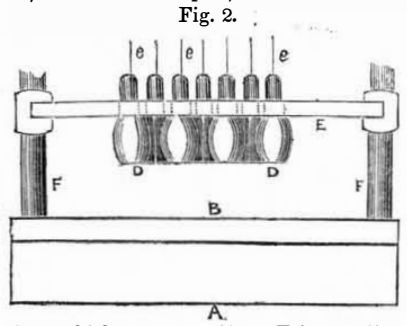
Figure 1.



This is an invention of Mr. Thomas E. Shull, of Lewistown Pa., who has taken measures to secure a patent for the same. The improvement will enable any person, singly, to take recreation by this game, without the aid of any person to set up the pins or return the balls. The balls come back of themselves to the place where the operator is standing, and he sets up all the pins at once himself, at his own end of the alley.

Figure 1 is a perspective view, and figure 2 is a section showing how the pins are guided to be set down on their appropriate places on the way. A is the alley-way, made in the usual manner; B is a curved back, and behind the pins, with an inclination to the sides; *a a*, are inclined channels for the balls to roll back on; D D are the ten pins, formed with shoulders, whichserve for guides. E is an adjusting screen; it is a board made with holes in it, which are of such a diameter as to receive the shoulders of the pins below, so as to retain them steady and truly in the exact position they are required to be set down on the way below, as represented in figure 2. The holes are therefore placed at such a distance from one another as the pins are required to stand on the plane below. F F are two posts to support the adjusting screen, E, also the guide screens, G H, which are formed like E, with guide perforations in them, through which the cords, *e e*, pass up to the top disc, I, which is fastened to a cross arm, J, at *h*, a metal eye through which the arm passes, and to which is attached a cord, K, which passes over a pulley, *j*, in the cross-head, L, and extends along to the front of the alley-way, where it passes over a pulley, A, on the axis, *l*, which is supported in the posts, N N. A handle, P, has an axis on which is a small pulley, having a cord passing over a small pulley above, on the axis, *l*. The pins are attached to the cords, *e e*, as represented, and are now in a position for the balls to be rolled against them. It will be observed that the cords are made quite slack, to allow the pins to fall down quite easily. When they are all knocked down, all the operator has to do is to apply his hand to the crank, P, draw up the cords, and the shoulders of the pins into the adjusting openings in the screen board, E, and let them descend gently on the plane below, where they will stand as now represented. The balls, when thrown, strike against the curved back-board, B, behind, and are deflected to the sides, and from the back run forward down the inclined channels, *a a*.

Fig. 2.



We have thus described the construction and nature of this invention, which is well adapted for recreation. More information may be obtained of the inventor.

Montgomery's Corrugated Boilers.

The editor of the Philadelphia Sun states that he recently witnessed a very successful experiment with this invention of Mr. R. Montgomery, which was illustrated and described in our last volume. He says:—

"The experiment we saw yesterday consisted of two pieces of copper, of equal surface and thickness, thrown into arches of about 15 inches in length; the one had a flat surface, and the other two corrugated arches. The arch with the flat surface gave way under a weight of a few pounds, while the corrugated arch withstood the weight of two men, who violently surged upon it, without making the least impression.

A gentleman present who saw an experiment tried upon a larger scale, to test the relative strength of the flat and corrugated arches, informed us that with two arches of the same length, thickness, and weight of metal, the plain arch gave way with 3,126 lbs. of pig iron upon its crown, while the corrugated arch bore the weight of 16,094 lbs. of the same metal for 48 hours. without the least perceptible deflexion. This was afterwards increased to 27,000 lbs. which also remained for 48 hours, without the least deflexion perceptible to the eye.

Dangers of Modelling in Colored Wax.

The following facts, taken from the Manchester Guardian (England), we commend to the attention of all those, who, as artists, or amateurs frequently model in wax.

"Few persons, especially perhaps of the many young ladies, who are now practising the pleasing art of modelling fruit, flowers, &c., in wax, at all suspect the great danger in which they are placed from the poisonous nature of the coloring matter of the wax which they handle so unsuspectingly. The white wax, for ustance, contains white lead; the green, copper; the yellow, chrome-yellow; the orange, chrome-yellow and vermillion—strong poisons all; while many other kinds of wax are equally poisonous, and therefore dangerous. There are very many persons who are aware of the intense sufferings for many years past of Mr. W. Bally, phrenologist and modeller in wax. Mr. Bally has been attimes completely paralysed, and is now, and has long been very nearly so, especially in his hands and arms; and he has also been affiicted with extensive ulceration of the throat, and has almost lost his voice. Both himself and his medical adviser, after a long attention to his symptoms, are satisfied that the primary cause of his affliction is the extent to which the subtle poisons in the wax with which he has worked, have been absorbed into his system through the pores of his hands, while the disease has been generally strengthened, and one part of it accounted for, by the occasional application of his fingers to his lips while at work. Mr. Bally says that he has known several cases in which young ladies have been attacked with partial paralysis of the hands and arms, after having devoted some time to the practice of modelling, but at the time he had no suspicion of the cause."

No coloring materials made from arsenic, copper, or lead should be used; but it is a fact, that these, and these alone, are the coloring materials in common use for almost all purposes; colored candies are no better than poisons, especially green colors.

The Influence of Railroads.

A Railroad Convention was held at New Haven, Conn., on Thursday last week, for the purpose of taking active measures to finish an air line from New York to Boston. A number of very excellent speeches were made, but the one made by Professor Silliman, who has recently returned from Europe, presents something so new on the subject that it cannot fail to interest all our readers.

He adverted to those portions of Europe where he had lately been, that possessed railroads, as being inhabited by a people of superior intelligence. For example, in those parts of Italy, particularly in the Pope's dominions, where railroads did not exist, there was squallid misery, rags, and the most importunate begging, while in Tuscany and Lombardy, and other parts of northern Italy, the people showed a better spirit, a high degree of prosperity, and there railroads prevailed. In England and Scotland the progress of railroads was wonderful. The country was covered with them, and he had been on some of them on which the trains went at the rate of seventy-two miles per hour by the watch, while the average was fifty miles. They moved faster than the wind, or the winged dove; and it was impossible but that some accidents should take place. He hoped that this would be a model railroad, not only in point of construction but for the vigilance of its police. In Germany he saw all along the railroads, a man in charge of every mile, with a signal ready to give warning in case of danger. Though in these countries they were ready to sacrifice men in hecatombs, there was less loss of life and limb by railroads in Europe than here; and Europeans showed a commendable care, which Americans lacked. He was not so much in favor of going ahead as some people. It was better to look ahead first, and then go ahead. For want of this precaution many went ahead and broke their heads. (Laughter.)

A joint society has been formed for monthly communications betweeen Genoa and New York, by vessels touching at Madeira, so as to be in direct correspondence with the English line of steamers to South America. The first voyage is expected to take place next month.

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NEW-YORK, NOVEMBER 22, 1851.

Opinions about New Inventions.

We have frequently expressed our decided opinions respecting the inutility and worthlessness of some inventions, and have proved others to be old, when alleged to be new. We are conservatives in regard to what is old and good, and reformers in respect to what is new and good. As the advocates of inventors' rights, we like to say a good word in favor of new and useful improvements, and this very duty compels us to speak as freely against that which is worthless and calculated to deceive the public. There never was a sham invention yet that was not claimed by its advocates, and those interested in it, as "one of the greatest inventions of the age." There are many inventors who make signal failures in the very inventions about which they are most enthusiastic. All inventors make some mistakes—but they are sincere and honest about them, and we know how to speak about and how to feel for them. But we have no sympathy for those speculators on the public, who deal in sham inventions; nay, instead of having any feeling for them, we have always denounced such schemes, and we always will denounce them. It is well known that whenever any one of those speculators is opposed, and the utility of his alleged discovery condemned, he always flies for relief to some great inventor or discoverer. He will say, "oh, Galileo was persecuted, Robert Fulton was laughed at, and Professor Morse was ridiculed;" he at once claims a martyr relationship to the "mighty dead and living," and be his invention ever so worthless, he never fails to make an impression, and sometimes a very strong one, in his favor, by such an appeal. We heard such an appeal made in favor of the celebrated "new invention" now before our citizens to prevent fires. The object of the invention is a very laudable one, and an invention to accomplish such an object is certainly a very desirable one. It is true that many excellent inventions have been sneered at, and their inventors looked upon as crazy enthusiasts, and there is, perhaps a kind of general tendency in the public mind to look with suspicion upon every new invention. There are reasons for this feeling; if all the inventions which have been brought before the public, and alleged to be new and good, had proved to be exactly as they were represented, there would be no want of public confidence in the success of a new invention. Great discoveries and inventions are desirable, they are welcomed by all intelligent men, as boons to humanity; but the public must be greatly excused for general incredulity about their utility, because so many worthless things have been, and are being continually thrust into public notice, for the mere purposes of gain. There are but few among the great mass who can judge correctly respecting even the apparent worth of an invention, and there are fewer still who are versed in the long history of inventions, so as to judge correctly about the novelty or age of an invention alleged to be new. It is because so many have been deceived by worthless inventions, and by things said to have been new, which have turned out to be old, that many really good inventions have been, for a long time, lightly esteemed, and have had hard battles with inferior but older inventions. Every sham invention, therefore, is a curse to the honest inventor; it is a fortress the shot from whose batteries tells deadliest against his interests and the progress of useful discovery, while, at the same time his banner is waving over its walls.

It is absurd to suppose that the public has any natural feeling against new inventions; it is not so; We have seen the Tabernacle in this city crowded to see the model of a balloon sail slowly through its lotty arch, and hear a lecture upon its qualities, in which it was asserted that it was capable of carrying forty passengers, in three days, from New York to California. Passages were taken out for San Francisco, and when an ex-Governor of Liberia attempted to give some reasons against its practibility, he was hissed down by the united assembly. All believed in the possibility of the project. Safe aerial navigation is a desirable art, and every one would be glad to see it successfully accomplished, and it is unreasonable to suppose that there is any natural opposition to any other desirable and good invention; but is it not reasonable to suppose that those who are once deceived by an alleged invention, are made skeptics in a great measure respecting others. It is so; and in view of this fact, we have a duty to perform to true and honest inventors and to the public, in expressing our opinions about inventions brought before the community; our object is to do good, and whatever our opinions may have been, this honest conviction has dictated them all, and ever will.

There are but few great and prominent inventions—inventions, we mean, which stand as the head of a class, such as the "Steam Engine," and "The Telegraph." The very great majority of inventions are improvements, and these are innumerable. From week to week they are going on, and improvement is added to improvement. We notice these improvements, for well we know that some things, supposed to be small, and appearing to be small improvements, involve great and important results. The great improvements in steam engines made by James Watt, were simply making the vacuum chamber a separate one from the cylinder, and working the steam on both sides of the piston. It has been the same with other inventions and improvements, and it always will be so. It is wrong to express a wanton opinion about any invention, and it is equally wrong, when able, not to express any opinion at all.

Coffee---Its Nature, Consumption, and Uses.

The coffee plant is a native of Yemen, in Arabia; the time of its introduction into Europe is unknown; it is mentioned in a work, published in 1573, by a German physician named L. Rauwolff. The Turks have Coffee Houses, in which they meet to sip their brown liquid, and chat together, like Englishmen in their ale houses. Coffee houses are common in Germany, and were, at one time, more common in England than at the present moment. The first Coffee House opened in London was by a merchant of Turkey, named Edwards; this was in 1652. Coffee was in public use before that time in France.

When coffee was first introduced into Britain it met with the most furious opposition from old and young, grave and gay, men and women fair. In 1674 the women of England petitioned Parliament against allowing the use of coffee, in which petition it was stated "that men, by its use, became like the desert of Arabia, and that if its use was persisted in, the offspring of mighty Anglo Saxon ancestors would dwindle into a succession of apes and pigmies; and on a domestic message, a husband would stop by the way to drink a couple of cups of coffee." Here we see the fair sex were jealous for the honor of good old English ale; and the question is, were they not right. Coffee, however, had and still has its advocates; it has been stated by them, that wherever it has been introduced, drunkenness has become less frequent, and the people more sober. We have no statistics to prove or disprove this statement, but it may justly be assumed to be true.

In the reign of Charles II., Coffee Houses were shut up in London by proclamation, in which it was stated, "the retailing of coffee nourished sedition, spread lies, scandalized great men, and might be considered a common nuisance." This arbitrary act occasioned violent discontent, and permission was given to open the Coffee Houses again, but the landlords were forbid to keep seditious papers on their premises. The Coffee Houses had become political club houses.

Four different kinds of coffee are used,—Mocha, which is the best, comes down the Persian Gulf, from Arabia; its berries are of a middling size, clean and plump, and of a greenish light olive hue; it sells dearer than any other. The next best is Java, which is grown in the Island of that name, and is cultivated by the Dutch. The other two kinds are the Brazilian and West India coffee, which are very similar. A field of coffee in full bloom is a sight worth going to Jamaica to see.

The quality and effects of coffee differ according to the manner in which it is roasted. It must be roasted with great care, and not over-done. The Turks roast it in an iron spoon, and roast it just before they are going to use it. This is the best plan, as coffee loses its flavor if exposed after being roasted. The reason of this is evident; the roasting brings out the essential oil to the surface, this is volatile, and is the fine aromatic quality of the bean; it therefore soon evaporates when exposed to the atmosphere. To roast coffee aright it should be done by an invention patented a few years ago in England, it consists in using a copper drum silverized inside, into which are placed the beans, and the drum made to revolve above the fire, until the beans are done. It is best not to over-roast them.

The peculiar principle of coffee is the *caffein*, which was discovered by Robiquet in 1821; it is a very active principle, and affects the urinary organs. Water saturated with coffee was first used by Grindal, in the Russian Hospital of Dorpat, in the treatment of intermittent fevers; it was also given as a powder, raw. In eighty cases, not one resisted its effects. Homopathic practitioners also use it with success.

As an article of diet, and as a beverage, coffee has become quite a favorite, if we may judge from the quantity consumed. No less than 144,986,895 pounds were imported into the United States in 1850; the value of this was $11,215,099. No country in the world consumes so much coffee in proportion to its inhabitants, as ours. Thus, last year, the average amount of coffee consumed by each man woman, and child, was over seven pounds. The consumption of coffee has greatly increased in England, and it does not appear that the fears of the old English matrons, about their sons becoming monkeys by its use, are yet realized.

Coffee is now very generally used by all Europeans as well as the old Turks, and in almost all American families, for a breakfast beverage. Its effects upon the human system may be peculiar, but general use has not yet developed anything extraordinary produced by it, except it may be the healthy appearance and rugged strength of some French miners, who use it in large quantities; this fact was brought before the Academy of Sciences in Paris last year. In some armies and navies, coffee has wisely been substituted for grog; it would be well if this were the case in every single instance. In cold weather coffee is an agreeable and safe stimulant. It was noticed that those French soldiers who had saved some coffee and sugar during the terrible retreat from Moscow, stood the cold much better than those who had none. Coffee affects the nerves of some people in a most singular manner, by making them trembling and feverish. No person so affected should use it. As a general thing, for almost every person, we believe it is a healthy and pleasant beverage. In England all the coffee is adulterated with yellow dock-root, ground up along with the beans; the law allows of this adulteration, and yet, for all this, the coffee there sells for about double the price it does in the United States.

Every family should buy their own beans and roast and grind them, for much of our ground coffee is also adulterated with roasted corn and peas. These adulterations are not the least unhealthy, but there is no earthly use of anybody paying for corn instead of coffee, and if anybody wishes to adulterate their own coffee, why they can do it to suit themselves.

When we reflect upon the great quantity of coffee now consumed by us every year, how that the consumption has increased from a little over four million of pounds, in 1790, to over one hundred and forty-four million of pounds, in 1850, we cannot shut our eyes to the seeming necessity of growing coffee for ourselves.

Our Southern States can surely raise good coffee; they beat the world for cotton and rice, both of which were introduced from foreign countries, and coffee, we think, can be as successfully cultivated as these have been.

Long Island Cotton.

Some cotton equal to Sea Island has been raised on Long Island, by Mr. A. P. Ricker, of Newtown, and it is believed that it can be made a profitable crop by a little attention. Tobacco has also been raised on the island with satisfactory results. Mr. R. intends in another season, we understand, to make quite a crop of cotton and tobacco.

American Pins.

There is a very pleasing article in the last number of "Hunt's Merchants' Magazine," respecting the manufacture of pins in the United States. To America belongs the credit of having invented the first pin machine; it was invented by Moses L. Morse, of Boston, during the war of 1812, but it never was used in manufacturing, as it was too delicate. Mr. Lemuel Wright, of Massachusetts, was the first person who invented a machine to make solid-headed pins. All the old pins were made with heads separate from the shanks; and, indeed, they were in general use in America—all imported—until a few years ago. As pins were so dear during the last war, some pin manufacturers came out from England and set up the business in this city, but after the war they failed in business, as pins could be imported much cheaper than they could make them. Mr. Samuel Slocum, of Rhode Island, commenced the manufacture of solid-headed pins at Poughkeepsie, N. Y., in 1838. He took out a patent in England, but none in America; he used his machine secretly. In 1840 Mr. John J. Howe took out a patent (United States) for making solid-headed pins, and it is now in use by the Howe and American Pin Company. There are three American patents in existence for improvements on machines for making solid-headed pins: one is Slocum's, the other Fowler's, the next Howe's; they are all owned by one company in Waterbury, Conn. The pins made are much cheaper than the imported kind, which were in common use a few years ago. Some pins are still made at Poughkeepsie, but the Company at Waterbury make nearly all the pins used in our country. Both companies make their own wire. We have heard Englishmen say that our American pins are well formed and finished, but they are not tempered like the wire of the English pins, hence they are softer, not as strong, and more easily twisted. The general run of our pins, in common use, we think inferior to the kind we sometimes see here, named "London Mixed," but then our pins are much cheaper.

Danger of Factories by Fire.

On Wednesday evening last week, an extensive Cotton Factory, on Nixon and Hamilton streets, near Fairmont, Philadelphia, was destroyed by fire. The hands were at work in the upper stories when the fire broke out below, and several lives have been lost—mostly females. Six bodies are reported to have been already found—so charred that they cannot be recognized. One man jumped from the fourth story window and was killed. The loss is about $40,000, partly covered by insurance.

This great loss of life was owing, no doubt, to the bad arrangement of the stairs, which lead from one story to another. We have known of quite a number of such accidents from the reprehensible arrangement of the outlets from the different flats in factories. There should always be an outside flight of stone or iron stairs, at each end of a large factory, from top to bottom. None but one flight may be used daily, but for emergencies of fire, two should be built when the factory is put up. The poor beings who perished amid the flames, in this factory, were cut off by the flames below, from finding their way out. Isolated stairs walled up from the rooms would allow free exit in all cases of fire. The great majority of our stairs in cotton factories are made of wood and not walled up between the carding, spinning, or weaving rooms. In the course of time, owing to the great quantity of oil used in factories, the stairs become as combustible as pitch pine. In the course of five minutes, if a fire broke out in the lower flat, the stairs would be burned down, and all escape from the upper stories cut off. This, by all accounts, appears to have been the case with the factory in Philadelphia. About 21 years ago, a similar scene was enacted at Johnstone, Scotland. Two years ago, a like one in a factory near Manchester, England. We should have factory inspectors as well as boiler inspectors, for we know some factories that from top to bottom, are no better than match boxes. We hope the above will be thoroughly investigated.

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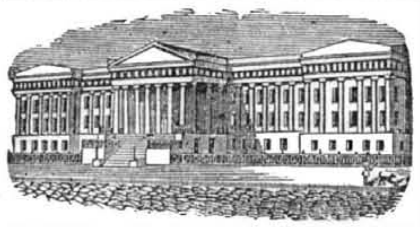

☞ Reported expressly for the Scientific American, from the Patent Office Records. Patentees will find it for their interest to have their inventions illustrated in the Scientific American, as it has by far a larger circulation than any other journal of its class in America, and is the only source to which the public are accustomed to refer for the latest improvements. No charge is made except for the execution of the engravings, which belong to the patentee after publication.

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING NOVEMBER 11, 1851.

To B. F. Adams, of Bangor, Me., for improvement in Cheese, Butter, and Bread Cutters.

I claim the arrangement of the circular revolving table and knife, the said knife being attached to the sliding shaft, and operated by means of a treadle and weighted cord and pulley, or their equivalents, so that the cheese or other article to be cut, may be placed upon the table and not removed until, by a single revolution of the wheel, and a few slight pressures of the foot upon the treadle, it is cut into as many parts as may be desired, without crumbling or waste.

To David Anthony, Sen., of Springport, N. Y., for improvement in the construction of Scythe Fastenings.

I claim the mode of adjusting the lever by rotating the ring around its own axis, by which the point of the scythe is thrown out or drawn in, as shown and described, the upper end of the lever, passing through an eye attached to the ring, the fulcrum of the lever being near the end of the snath, and the scythe attached to the lower end of the lever, as set forth.

[This is a capital improvement—we can endorse its good qualities. A farmer can set a scythe, by this improvement, in a trice.]

To B. F., Bee, of Harwich, Mass., for improvement in Hand Planes.

I claim the application to carpenters' planes and moulding tools, of a new method of confining the iron, by a metallic apparatus, acting upon the principle of the lever and cam, in combination with the set screw for adjusting the same, as described, using for the purpose the aforesaid contrivance or arrangements of parts, or any other, substantially the same, and which will produce the same effects in like manner.

To Jonathan Bean, of Montville, Me., for improvement in screens for Winnowing Machines.

I do not claim any part or portion of the gear, fans, or forms of the hopper, or shoe, as an original invention, as I am aware that all these have been in common use; I claim the arrangement of guides, and side apertures in the upper movable screen, and the lower screen attached to the shoe, and which screen may be attached to any common winnowing machine, in the manner and for the purposes described.

To Daniel Drawbaugh, of White Hill, P. O., Pa., for improvement in Stave Jointing Machines.

I claim the adjustable knife, in combination with the adjustable rest, as described, to adapt them to the jointing of staves for casks of different bilges.

To G. W. Perry, of Thompson, Ct., for improvement in Shuttle Motions of Looms.

I do not claim hanging the picker staff on a radius rod, as I am aware that it has been so hung, and by the aid of other devices, in connection, a motion parallel to the raceway has been produced, but what I claim is hanging the picker staff or staves, upon radius rods, and having two distinct radial motions, substantially as set forth, for the purpose of causing the end which operates upon the shuttle, to describe, or make a rectilinear motion parallel with the raceway, and with less power than has heretofore been done.

[This is a good improvement.]

To Joseph Steger, of Roxbury, Mass., (assignor to Wm. Mitchell), for improvement in machines for Cutting the Soles of Boots and Shoes.

I claim the mode or means described for insuring the unerring turning of the knife frame for cutting both sides of the sole, said means consisting of notched pawl, lever, and spring, operating on the journal plates of said frame, substantially as described.

To Ezekiel Booth and Ezra Ripley, of Troy, N. Y., for improvement in Car Seats.

We claim the arrangement of two levers in a cross position, so that any required height of back may be carried, and reversed from and to either side of the seat, and secure it firmly in its position, at any required angle, substantially as described.

To Alvan Clarke, of Cambridge, Mass., for improvement in Telescopes.

I claim combining the glasses or glasses and diaphrams, with a sliding or eye-piece tube, of a telescope, by means of a tube or slide, perforated through its side or sides, in such a manner as to enable a person, when the said tube is withdrawn from its enclosing tube, to obtain ready access through the openings or perforations, to the glasses or lenses, the whole being substantially in the manner and for the purposes as described.

To J. C. Flint, of Boston, Mass., for improvement in Machines for Cutting Hides.

I claim the combination of mechanism for reducing dry hides to a strip, and mechanism for cutting or removing the hair from the underside of the said strip at one continued operation, substantially in the manner as described.

To A. W. Johnson, of St. George's, Del., for improvement in Bending Felloes.

I claim the curbs, in combination with the box or its equivalent, said curbs being constructed in the manner and for the purposes substantially as described.

To Richard Kitson, of Lowell, Mass., for improvement in Card Grinders.

I claim an instrument for grinding or sharpening wool, cotton, or other cards, made with sectional card-teeth, which are so bent at the heel as to make the sharp edge more prominent than its opposite and broad edge, together with its application to the card that is to be ground in such a direction as to cause the sharp edge of the teeth of the grinder to be first presented to and enter among the teeth of the card.

To William, Wm. H. & H. J. Lewis, of New York, N. Y., for improvement in Daguerreotype Apparatus.

We claim, first, the combination of a camera box, with a cross opening, or mortise, to receive a sliding frame that carries both an object glass and the daguerreotype plate, as described.

Second, the construction and application of a sliding frame with a division to receive a frame carrying an oblong object glass, so formed as to be placed either vertically or horizontally, as described.

Third, the construction of the slide, so as to receive in the other division, a daguerreotype plate in a frame, such frame being pressed in place by springs, and held in place by blocks, taking notches in the frame, as described.

To L. D. Livermore, of Hartland, Vt., for improvement in Coupling Railroad Cars.

I claim the combination of a stiff car coupling, with the ends of a couple of cars, and with the trucks under the same, substantially in the manner set forth, by which the cars are made to guide the trucks under them, and keep them in their proper positions on the track, to wit, in such positions that a line drawn midway between and parallel with the truck axles, will be at right angles to any straight track, and also at right angles to the tangent of any curved railroad track.

To A. J. Lonsbury, of Somerville, Tenn., for improvement in Abdominal Supporters.

I claim the employment of a pubic brace of the peculiar form described, so as to fit the os pubis, and press uniformly upon the inguinal region, while the upper edge of the brace is bent forward, so as to effect no inconvenient pressure upon the abdomen of the wearer, said pubic brace being made of hammered leather, or other tenacious material, in the manner and for the purpose described.

To Levi Newcomb, Jr., of New Bedford, Mass., for improvement in Bedsteads.

I claim the manner of securing the lower bedstead to the upper one, so that it may slide underneath the upper one or be drawn out from it as described, viz., by having the clamps attached to the upper part of the foot posts of the lower bedstead, and clamps fitting in the recesses of the rails of the upper bedstead, and the rails of the lower bedstead passing through the mortise holes in the foot posts of the upper bedstead, substantially as set forth.

To Richard Rickey, of Rutland, O., for improvement in Horse Collars.

I claim connecting the sides of the breast plate by a flat joint, in combination with the levers attached to the sides of the breast plate and rising over the neck without touching the shoulders of the animal, and connected at the top, by which means the breast plate is made adjustable to the side of the horse, substantially as set forth.

To I. S. Stover, of Erwina, Pa., for improvement in Grain Kilns.

I claim the combination of the heating chamber with the two drying beds, one above and the other below, as described.

To Isaac Taylor, of New York City, for improvement in Frosting Plates of Glass.

I claim the use of a rocker, containing pebbles, sand, and water, for the purpose of frosting plates of glass, or embossed work, as above described.

DESIGN.

To S. W. Gibbs, of Albany, N. Y., (assignor to North, Harrison & Chase, of Philadelphia, Pa.), for Design for Stoves.

Artesian Wells.

The Southern Standard contains a very interesting account of an artesian well lately bored in Columbus, Miss., by Messrs. Copeland and Evans.

The well is near the centre of the town, 100 feet above low water mark, is a little over 560 feet deep, and discharges about thirty gallons of water per minute four feet above the ground. The temperature of the water is 65° Fah., while that of the ordinary wells in the vicinity, 30 and 40 feet deep, is 62°.

The following strata were bored through during the progress of sinking the shaft. It will be of interest to our geologists.

1. Feruginous clay, sand, and water-worn silicious pebbles—50 feet.

2. Green sand, composed of fine grains of silex, chlorate of iron, mica, alumina, and a small portion of lime—160 feet. A few feet of the lower portion of this stratum contains a considerable number of small black water-worn pebbles, and also lignite.

3. Argilio—Micaceous earth—45 feet.

4. Incoherent argilaceous earth, of a light ash color, containing lignite and iron pyrites. This stratum resembles in structure pressed, dried prunes, with interstices glazed. The caving tendency of this stratum occasioned more difficulty than any other portion of the well—5 feet thick.

5. Argilio—Micaceous earth, with a small portion of fine sand—20 feet.

6. Argilio—Silicious earth, darker than the 5th, also containing lignite—13 feet.

7. Brown colored argilite, sufficiently hard, when dry, for slate pencils, interspersed with lignite—7 feet thick.

8. Fine grit, ash color, with fine particles of mica. The grit in this stratum has been used by some on razor strops, and pronounced very good—7 feet thick.

9. A continuation of the same fine grit, with alternate layers of like colored argilaceous earth, 11 feet thick.

10. Yellowish colored argilaceous earth, hard when dry—12 feet thick.

11. Brown colored argilaceous earth, difficult to bore, hard and brittle when dry—28 feet.

12. Compact green sand, resembling stratum second, 3 feet thick, and then passing into a coarse drift sand, with green particles of chlorate of iron, &c.

The most of the water in the prairies, west of Columbus is obtained in a thin stratum intervening between the green sand and indurated marl, composed of calcareous sandstone, conglomerate, loose water-worn pebbles, a whitish colored silicious rock, and lignite.

At a recent meeting of the New Jersey Historical Society, held at Newark, an interesting report on an artesian well in that place was presented.

It was commenced in October 1850, by the Newark India Rubber Company, to obtain a supply of water, and was relinquished in June, 1851. The water is now 36 feet below the surface of the earth. The entire rock through which the bore passes is of red shale. At the depth of 90 feet the auger penetrated a cavity of the rock and fell three feet, when 14 feet of water which had previously existed in the bore, passed off. The "Newark Advertiser," in speaking of the matter, says:—

"The well was commenced with a bore of 4½ inches in diameter, and continued of this size to the depth of 170 feet, when the auger broke and it was found impossible to remove it. A smaller bore of 2½ inches was then commenced so as to pass down by the side of the imbedded drill This continued on to a depth of 376 feet, when the work was abandoned, ultimate success being thought very doubtful. The committee was not able to take the temperature of the well at different depths, on account of the large quantity of water in the bore during its progress.

The chairman of the committee, Mr. Wm. Kitchen, regretted that this attempt was so soon abandoned, inasmuch as a continuance of the work might have brought to light new and interesting facts relative to the geology of this district, as well as, in all probability, ultimately realizing the objects of the boring. From geological data based upon the dip or inclination of the sand-stones, and particularly their relation to trap-rocks, it seems probable that, by penetrating the sand-stones to the igneous rocks on which they lie, abundance of water would be obtained, and that under very considerable pressure. To effect this would require a boring of probably not far from 1,000 feet in depth.

Analysis of Atmospheric Air.

M. Lewy, to whom the Academy of Sciences in Paris entrusted a commission for the examination of atmospherie air, in New Grenada and elsewhere, has made an interesting report of his labors to that distinguished body.

"He has followed the accurate method of M. Regnault, of analysing by volumes, and so minute are his investigations, as to descend into the infinitesimal quantities of the one ten-thousandth part of a degree of the endiometer. As to France, his labors agree with those of Gay Lussac and others; that is, in volumes of oxygen, 20·80; of nitrogen, 73·20; of carbonic acid, ·004. In New Grenada, he took the mean of eleven observations at different localities, and found that in 10,000 volumes of pure atmospheric air, he had uniformly 1201·425 of oxygen, 7894·557 of nitrogen, and 4·008 of carbonic acid. These proportions are almost identical with those observed in various parts of Europe. He remarked, however, that the air of New Grenada presented once or twice a year a very remarkable increase in the proportions of carbonic acid, attended with an appreciable reduction of the oxygen; and causing a very sensible alteration in the constitution of the atmosphere.

M. Lewy ascribes this phenomenon to volcanic action, the frequent discharges of lava clearing the soil, burning up the forests and setting free large quantities of the former gas. He has found ten or twelve times the usual proportion of the acid at those times; and a corresponding absence of oxygen. To the same volcanic causes, M. Lewy lays the extraordinary development of vegetation in South America. The immense volumes of carbonic gas projected into the air, contribute, he thinks, largely to nourish the prodigious growth of tropical plants, which frequently furnish us the spectacle of a sizeable tree as a representation of what, in less genial latitudes, is represented by a lowly bush. Carbon, it is well known, constitutes one-half the composition of wood.

In examining the atmosphere at the level of the sea, M. Lewy has arrived at some curious results. In the daytime he found the air contained a little more of oxygen and carbonic acid than at night. The further he proceeded from the shore the more marked the difference became. He attempts to account for the fact by suggesting the probable action of the solar rays, which, by warming the water during the day, determine the disengagement of a portion of the gas held in solution. Air extracted from water is known to be more highly charged with oxygen and carbonic acid than the atmosphere. By an increase of carbonic acid gas, and a decrease of oxygen in the atmosphere, at certain seasons, epidemics can easily be accounted for in those countries subject to great atmospheric changes.

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TO CORRESPONDENTS.

E. V., of N. H.—Your plan of the steam engine is not quite new to us, excepting the mode of working the valves; in Vol. 4, Sci. Am., we published an illustration of a cylinder moving on a fixed piston: your plan is not so good, in our opinion, as many of the engines in common use; you can save one piston rod at least, by using a vibrating engine.

Rev. S. T., of ——.—On page 28, Vol. 4, of our paper, there is a process described, to color and render stone impervious to moisture; if specially desired, we could give you a good deal of information about artificial stone.

G. W. C., of Me.—We are not able to see into your plan of propelling the vessel by the water in which she sails. The description, we understand, but how the wheel can operate we cannot see.

J. B., of S. C.—You are correct about the action of the furnace and the plan to consume the smoke;—boilers have been and are now in operation, with perforations through the first bridge wall, to admit air to mingle with the smoke (carbonic oxide) when the said gas ignites, and the result is its combustion.—Many years ago we saw a furnace erected upon the identical principle of yours, and it was most economical in the consumption of fuel; if you erect it you will find it to work well, but you must use a slide for your air-pipe, as it is best to shut it up sometimes, and the air has to be admitted in quantity according to the state of the fire—most when new mended.

B. J., of Vt.—Your plan for propelling boats is quite old; we can show you drawings of a like plan published some years ago.

J. W. P., of Ohio.—There is a very excellent elementary work on Electricity, by Harris, price two shillings and six-pence; another by Bain, price $1. There is a fine article on the whole subject in the American Encyclopedia of Chemistry, the price of which is $5.

G. B. W., of Ill.—Yes!

W. H. G., of Ky.—We know of no work to recommend you upon that subject.

J. H., of O.—The work of which you inquire the price is $5, but it could not be sent by mail; it weighs over 32 oz.

A. P. C., of Ky.—We have examined the plan of your press, and do not see anything to prevent its operating well; it is simply a compound screw-press, and not patentable, according to our judgment.

J. M. G., of Ohio.—A. K. Carter, of Newark, N. J., is the assignee of Blanchard's Patent Lathe, for turning spokes and other irregular forms: we do not know the price. Express our thanks to Mr. Jones for his fine list of subscribers.

O. C., of Ohio.—Your contrivance appears to be new and good for the purpose.

G. N. K., of Ala.—We have forwarded your letter to Messrs. Sherry & Byram, clock makers, at Sag Harbor, whose advertisement appears in our columns.

W. J. F. S., of Ill.—An iron handle for a woodman's axe would not answer a very good purpose, especially on a frosty day. Try it some cold morning and see how you like it. The mode of connecting appears to be novel. We do not know the price charged for magnets; Messrs. B. Pike & Sons, 166 Broadway, have them for sale.

M. K., of Mass.—The numbers of Vol. 6, which you order, we can send you for 50 cents. The numbers of Vol. 4 we have not got.

D. W. E., of N. Y.—The patent which you have we consider will cover its application to locomotives as well as trucks.

F. H., of Md.—Dr. Wollaston not only decomposed water by electricity, but produced, by the same agent, a variety of other effects, which had previously been considered as exclusively produced by galvanism.

G. W. W., of Mass.—The 18 last numbers of Vol. 6 we can furnish you for 72 cts., if you desire them.

G. W. S., of N. J.—Your plan of rail will no doubt diminish the price, and as we do not know of any other like it, we think a patent could be obtained. The suggestion is worthy of attention.

J. M., of Mass.—The apparatus you speak of might be useful to thermometer and scale makers; if new you would be able to obtain a patent for it, upon this latter point we cannot decide without a drawing and description.

Money received on account of Patent Office business for the week ending November 15.

G. J. W., of Me., $30; W. & S., of N. Y., $20; B. & W., of Ct., $25; C. B. M., of N. Y., $50; G. G., of N. Y., $20; D. W., of N. Y., $10; F. P., of N. Y., $30; J. D., of Pa., $15.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Nov. 15:—

B. & W., of Ct.; D. W., of N. Y.; W. W. V., of Md.; J, W. M., of N. H.; J. Van H., of Ill.

Sending Receipts.---Postage on Books.

The Post Office Laws do not allow publishers to enclose receipts; when the paper comes regular subscribers may consider their money as received.

Subscribers ordering books or pamphlets are particularly requested to remit sufficient to pay postage.

An Important Paragraph.

To preclude subscribers the necessity of writing for back numbers of the Scientific American, we shall forward all the back numbers of Volume 7, dating their subscriptions from the commencement unless they instruct to the contrary. We shall send the back numbers issued on this Volume until No. 13, after that time the names will be entered from the date of the reception of orders, unless the writer expresses a wish to receive the back numbers.

Whenever our friends order numbers they have missed—we always send them if we have them on hand. We make this statement to save time and trouble, to which we are subjected in replying when the numbers called for cannot be supplied.

Back Numbers and Volumes.

In reply to many interrogatories as to what back numbers and volumes of the Scientific American can be furnished, we make the following statement:

Of Volumes 1, 2 and 3—none.

Of Volume 4, about 20 Nos.; price 50 cts.

Of Volume 5, all; price, in sheets, $2; bound, $2,75.

Of Volume 6, all price in sheets, $2; bound, $2,75.

ADVERTISEMENTS.

Terms of Advertising.

One square of 8 lines, 50 cents for each insertion.
" 12 lines, 75 cts., " "
" 16 lines, $1,00 " "

Advertisements should not exceed 16 lines, and cuts cannot be inserted in connection with them at any price.

American and Foreign Patent Agency

IMPORTANT TO INVENTORS.---The undersigned having for several years been extensively engaged in procuring Letters Patent for new mechanical and chemical inventions, offer their services to inventors upon the most reasonable terms. All business entrusted to their charge is strictly confidential. Private consultations are held with inventors at their office from 9 A. M., until 4 P. M. Inventors, however, need not incur the expense of attending in person, as the preliminaries can all be arranged by letter. Models can be sent with safety by express or any other convenient medium. They should not be over 1 foot square in size, if possible.

Having Agents located in the chief cities of Europe, our facilities for obtaining Foreign Patents are unequalled. This branch of our business receives the especial attention of one of the members of the firm, who is prepared to advise with inventors and manufacturers at all times, relating to Foreign Patents.

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THE SUBSCRIBER has on hand several improved Steam Engines of superior quality, and made of the best materials, particularly adapted to manufacturing, saw mills, flour mills, &c. He will also make to order, at the shortest notice, engines and boilers of from 2 to 50 horse power, with all their appendages; prices reduced. Also, shafting, mill gearing, saw mills, presses, drills, &c. He has also facilities for furnishing lathes, planes, and scroll chucks, of the most approved styles and patterns, at short notice. Chain pumps always on hand, wholesale and retail, at No. 4 Howard st., New Haven, Ct.
10 7* AARON KILBORN.

TWO STEAM ENGINES FOR SALE—Of 3 and 6 horse power (new); price $150 and $200; also, now finishing, 1 1-2 doz., more of those superior 8 feet Slide and Screw Cutting Lathes; price, including counter shaft, hangers, pulleys, and full set of gearing, $250. Inquire of CARPENTER & PLASS, corner of Hester and Elizabeth streets, N. Y. 10 2*

THE SATURDAY EVENING POST, THE Leading Literary Weekly in the Union.—The proprietors think it unnecessary to dwell upon the distinguishing features of the "Post," whose brilliant success, during an existence of thirty years, is a sure guarantee of the future. For the coming year we have made arrangements for the following nouvelletts:—"Eoline, or Magnolia Vale," by Mrs. Caroline Lee Hentz, author of Linda, Rena, &c.; "Trial and Triumph," by T. S. Arthur, author of The Iron Hand, Temperance Tales, &c. &c., &c. The "Post" will also contain, weekly, choice selections, news, bank note list, state of markets, &c. Terms—Single copy, $2 per year, or three years for $5, in advance. Clubs (to be sent to one P. O.), 4 copies, $5; 9 copies, $10; 14 copies, $15; 21 copies, $20, in advance. Address always post-paid. DEACON & PETERSON, 66 south 3rd st., Philadelphia. A copy of the "Post" will be sent as a specimen to any one. 10 5

PAINTS, &c. &c.—American Atomic Drier, Graining Colors, Anti-friction Paste, Gold Size, Zinc Drier, and Stove Polish.

QUARTERMAN & SON, 114 John st.,
9tf Painters and Chemists.

JOHNSON'S UNEQUALLED SAW GUMMER for gumming out the teeth of saws, an article indispensible for saw mill owners. This article has been thoroughly tried and well approved, for sale by G. A. KIRTLAND, 205 South street, New York. 9 9*

McCORMICK'S PATENT REAPERS AND MOWERS.—1700 of these machines, for which the great Medal of the World's Fair was awarded, are being manufactured at Chicago, Ill, with the intention of supplying the South-eastern States for the next harvest The gold medal of the Chicago Institute was recently awarded for this Reaper and Mower, tested against two other mowers, in cutting prairie grass; and the first premium of the State Agricultural Societies of Wisconsin, Michigan and Pennsylvania, were also awarded at their late Fairs. Price $120 at Chicago, and $122 delivered at Philadelphia; terms otherwise accommodating. 9tf

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1851 TO 1856.----WOODWORTH'S PAtent Planing Machines.—Ninety-nine hundredths of all the planed lumber used in our large cities and towns continues to be dressed with Woodworth's Machine. Price of the machine from $150 to $760. For rights in the unoccupied towns and counties of New York and Northern Pennsylvania, apply to JOHN GIBSON, Planing Mills, Albany, N. Y.
9 10*

BALLOONS.—I am prepared to manufacture Hydrogen Balloons of from 1 pound to 50,000 lbs. ascending power to order. Balloons capable of carrying up one or two persons always on hand. The Balloons will be of the most perfect construction, so that any person can, with certainty and safety ascend with them. Instructions to insure success given to purchasers gratis. JOHN WISE, Lancaster, Pa. 9 10*

BROOM MACHINERY.—The most improved and durable machinery for the manufacture of Brooms, for sale by JACOB GRAY, Scotia, Schenectady Co., N. Y. Address post-paid. 4 8*

TRAUTWINE ON RAILROAD CURVES.—By John C. Trautwine, Civil Engineer, Philadelphia; just published and for sale by WM HAMILTON, Actuary of the Franklin Institute Price $1.

"This is a really good work, and we heartily recommend it to our civil engineers."—[Scientific Am.

"We have carefully examined this work, and regard it as the best that has yet appeared on the subject," &c.—[Am. Railroad Jour. 8 10*

POST'S PATENT SLIDING DOOR FRONTS—For Stores and Public Buildings; a new, cheap, and simple fixture for securing store fronts, which renders them fire and burglar proof, has been invented and patented by the subscriber, who is now prepared to sell rights. Messrs. Quarterman & Son, 114 John st., N. Y., are general agents. Address (post paid) Wm. POST, Architect, Flushing, L. I. 6 3m

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TILTON's Patent Violin.—The undersigned having patented his Violin Improvement, is prepared to exhibit it to the public. Being now in New York, he may be found at No. 18 Park Place (Mr. J. Wiley's), where he will be pleased to see such gentlemen as take an interest in his invention. All communications addressed "Wm. B. Tilton & Co.," as above, or at Carrolton, Pickens Co., Ala.
3 12* WM. B. TILTON.

LEROW & BLODGETT'S PATENT ROTARY SEWING MACHINE.—The undersigned, having purchased the right to use, sell, and manufacture these machines for the States of Alabama and Mississippi, and their other business engagements preventing them from giving it their personal attention, they are disposed to sell out their right to the above-mentioned States, or counties in them, if preferred, upon favorable terms. To an energetic and industrious man we will sell upon such terms as will insure a large and handsome profit. Apply to Mr. W. SCRUGGS, of the firm of Messrs. Scruggs, Drake & Co., Charleston, S. C., or to WM. MAILLER, Decatur, Ala. 4 8*

PROFESSOR ALEX. C. BARRY'S TRICOPHEROUS OR MEDICAT'ED COMPOUND.—Professor Barry does not hesitate to put his Tricopherous, for the two grand requisites of efficacy and cheapness, against any preparation for cleansing, renewing, preserving, and strengthening the Hair, that has ever been advertised or offered for sale. He challenges the associated skill and science of the medical world to produce, at any price, an embrocation that will reduce external irritation, cure ordinary cutaneous diseases and severe cuts, sprains, pains, &c. Sold in large bottles, price 25 cents, at the principal office, 137 Broadway, New York, and by the principal merchants and druggists throughout the United States, Canada, Mexico, West Indies, Great Britain, France, &c. 4 12*

CLOCKS FOR CHURCHES, PUBLIC BUILDINGS, RAILROAD STATIONS, &c., and REGULATORS FOR JEWELLERS.—The undersigned having succeeded in counteracting effectually the influence of the changes of the temperature upon the pendulum, and introduced other important improvements in the construction of clocks, 2re prepared to furnish an article, superior in every respect (the highest grade warranted to vary less than two minutes in a year) to any made in the United States. Complete opportunity will be afforded to test their qualities. Glass (illuminated) dials of the most beautiful description furnished. Address SHERRY & BYRAM, Oakland Works, Sag Harbor, Long Island, N. Y.

"At the Oakland Works of Sherry & Byram there are made some of the finest clocks in the world."—[Scientific American.

"Mr. Byram is a rare mechanical genius."—[Jour. of Commerce. 5tf.

PATENT CAR AXLE LATHE—I am now manufacturing, and have for sale, the above lathes; weight, 5,500 pounds, price $600. I will furnish a man with each lathe, who will turn and finish axles for 50 cents each, if desired. I have also for sale my patent engine screw lathe, for turning and chucking tapers, cutting screws and all kinds of common job work, weight 1500 lbs., price $225. The above lathe warranted to give good satisfaction. J. D. WHITE, Hartford, Ct. 7 6m*

MACHINERY FOR SALE—Four dead spindle filling frames, 1-16 strand speeder, 1 warper, 1 lapper, &c. Also turbine water wheels, 6 ft. diameter, of most approved patterns, at $275 each; a breast wheel, &c.; 20 feet long, and an iron under-shot water-wheel. ELI WHITNEY.
New Haven, Oct. 22, 1851. 7 6*

VALUABLE WATER POWER and Machinery for sale in Virginia.—This property is situated on the Rivanna River and Virginia Central Railroad, within one and a half miles of the town of Charlottesville, and known as the "Charlottsville Factory." The river is navigable from Richmond to the spot. The property consists of an abundant water power, about 13 acres of land, a cotton and woollen factory, containing 552 spindles and 12 looms, with the usual accompaniment of machinery, wool cards, jack, &c., grist, plaster, and saw mills, iron foundry, brick store-house, and dwellings for some ten or a dozen families; also a variety of carpenters', machinists', and blacksmiths' tools, comprising cutting engine, lathes, screw tools, &c. The entire property will be sold at public auction on Thursday, Dec. 2nd next, on very accommodating terms. For further information address J. W. Saunders, J. A. Marchant, or the undersigned, Charlottesville, Va.,
8 3* HENRY W. JONES.

IRON FOUNDERS MATERIALS—viz.: fine ground and Bolted Sea Coal; Charcoal, Lehigh, Soapstone and Black Lead Facing. Iron and brass moulding sand; Fire Clay, Fire sand and Kaolin;—also English, Scotch and Welsh Fire Bricks—plain arch, circular and tower cupola—for sale by G. O. ROBERTSON Liberty place, between 57 and 59 Liberty-st. (near the Post Office) N. Y. 7 12*

GREGORY'S PATENT EQUALIZER, for Engines using steam expansively.—This invention largely economizes fuel, and may be attached, at a trifling cost, to any engine now working, high or low pressure, on land or water, City, County, and State Rights for sale. Terms and particulars may be had, by letter, or on personal application to T. B. ROBERTSON, Agent, 120 Water st., N. Y. N. B.—A liberal commission allowed. 7 4*

A CARD.—The undersigned begs leave to draw the attention of architects, engineers, machinists, opticians, watchmakers, jewellers and manufactures of all kinds of instruments, to his new and extensive assortment of fine English (Stubs) and Swiss Files and Tools; also his imported and own manufactured Mathematical Drawing Instruments of Swiss and English style—which he offers at very reasonable prices. Orders for any kind of instruments will be promptly executed by F. A. SIBENMANN Importer of Watchmakers' and Jewellers' Files and Tools and manufacturer of Mathematical Instruments 154 Fulton st. 6 9*

SCRANTON & PARSHLEY, Tool Builders, New Haven, Conn., have on hand six 12 ft. slide lathes, 28 in. swing; also four 8 ft. do.; 21 in. swing, with back and screw gearing, with all the fixtures; one 5 ft. power planer; 12 drill presses, 4 bolt cutting machines, 30 small slide rests; 5 back geared hand lathes, 21 in. swing; 15 do. not geared; 8 do. 17 in. swing on shears 5 1-2 feet; 25 ditto with and without shears, 13 in. swing; counter shafts, all hung if wanted suitable to the lathes. Scroll chucks on hand; also index plates for gear cutting. Cuts of the above can be had by addressing as above, post-paid. 9tf

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BEARDSLEE'S PATENT PLANING MAchine, for Planing, Tonguing and Grooving Boards and Plank.—This recently patented machine is now in successful operation at the Machine shop and Foundry of Messrs. F. & T. Townsend, Albany N. Y.; where it can be seen. It produces work superior to any mode of planing before known. The number of plank or boards fed into it is the only limit to the amount it will plane. For rights to this machine apply to the patentee at the abovenamed foundry—or at his residence No. 764 Broadway; Albany. GEO. W. BEARDSLEE. 5tf

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WATTS & BELCHER, Manufacturers of Steam Engines, Lathes, Planing Machines, Power Presses, and Mechanics' Tools of all descriptions. Orders respectfully solicited and punctually attended to. Washington Factory, Newark, N. J. 7 20*

LIST OF PRICES of Universal Screw Chucks, manufactured and for sale by O. L. REYNOLDS, Dover, N. H.:—4 inch. diameter, $12 6 inches, $18; 9 inches, $25; 12 inches, $30: 15 inches, $35; 18 inches, $40. 7 4*

MACHINERY.—S. C. HILLS, No. 12 Platt-st. N. Y. dealer in Steam Engines, Boilers, Iron Planers, Lathes, Universal Chucks, Drills; Kase's, Von Schmidt's and other Pumps; Johnson's Shingle Machines; Woodworth's, Daniel's and Law's Planing machines; Dick's Presses, Punches and Shears; Morticing and Tennoning machines; Belting; machinery Beal's patent Cob and Corn mills; Burr mill and Grindstones; Lead and Iron Pipe &c. Letters to be noticed must be post-paid. 1tf

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LAP-WELDED WROUGHT IRON TUBES for Tubular Boilers—from 1 1-4 to 7 inches in diameter. The only Tubes of the same quality and manufacture as those so extensively used in England Scotland, France and Germany—for Locomotive Marine and other steam Engine Boilers.

THOS. PROSSER & SON, Patentees,
1tf 28 Platt-st. N. Y.

LATHES FOR BROOM HANDLES, Etc.—We continue to sell Alcott's Concentric Lathe, which is adapted to turning Windsor Chair Legs, Pillars, Rods and Rounds; Hoe Handles, Fork Handles and Broom Handles.

This Lathe is capable of turning under two inches diameter with only the trouble of changing the dies and pattern to the size required. It will turn smooth over swells or depressions of 3-4 to the inch and work as smoothly as on a straight line—and does excellent work. Sold without frames for the low price of $25—boxed and shipped with directions for setting up. Address (post.paid) MUNN & CO.
At this Office.

MALLEABLE IRON FOUNDRY, EASTON, Mass.—The subscriber continues to manufacture castings of every variety, for machinery and other purposes, of the best quality, at the above establishment, we have facilities for making castings 5 1-2 feet in length. Persons wishing castings can send patterns to Easton Express, Boston, Mass. All letters will be promptly attended to.
8 10* DANIEL BELCHER.

WOOD'S IMPROVED SHINGLE MACHINE—Patented January 8th 1850, is without doubt the most valuable improvement ever made in this branch of labor-saving machinery. It has been thoroughly tested upon all kinds of timber and so great was the favor with which this machine was held at the last Fair of the American Institute that an unbought premium was awarded to it in preference to any other on exhibition. Persons wishing for rights can address (post-paid) JAMES D. JOHNSON, New Haven, Ct.; or WM. WOOD, Westport; Ct., All letters will be promptly attended to. 37tf

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LEONARD'S MACHINERY DEPOT, 109 Pearl-st. 60 Beaver N. Y.—The subscriber is constantly receiving and offers for sale a great variety of articles connected with the mechanical and manufacturing interest, viz.: Machinists' Tools—engines and hand lathes; iron planing and vertical drilling machines; cutting engines, slotting machines; bolt cutters; slide rests; universal chucks &c. Carpenters' Tools—mortising and tennoning machines; wood planing machines &c. Steam Engines and Boilers from 5 to 100 horse power. Mill Gearing—wrought iron shafting; brass and iron castings made to order. Cotton and Woolen machinery furnished from the best makers. Cotton Gins; hand and power presses. Leather Banding of all widths made in a superior manner; manufacturers' Findings of every description. P. A. LEONARD. 10tf

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MANUFACTURE OF PATENT WIRE Ropes and Cables—for inclined planes, suspension bridges, standing rigging, mines, cranes, derick, tillers &c.; by JOHN A. ROEBLING; Civil Engineer—Trenton N. J. 47 1y*

RAILROAD CAR MANUFACTORY—TRACY & FALES, Grove Works, Hartford, Conn. Passage, Freight and all other descriptions of railroad Cars, as well as Locomotive Tenders, made to order promptly. The above is the largest Car Factory in the Union. In quality of material and in workmanship, beauty, and good taste, as well as strength and durability, we are determined our work shall not be surpassed. JOHN R. TRACY,
39tf. THOMAS J. FALES.

BEST CAST STEEL AXLES AND TYRES, (a new article,) for Railroad Carriages and Locomotives. The quality of this steel is sufficiently attested in the announcement that it has carried off the first prizes awarded at the World's competition of 1851, in London. The axles are in general use on the Continent, and are now offered in competition with any other that can be produced; and to be tested in any way that may be desired by the engineers of the United States, either by impact or by torsion. This steel is manufactured by Fried Krupp, Esq., of Essen, in Rhenish Prussia, represented in the United States by THOS. PROSSER & SON, 28 Platt st., N. Y.
2tf.

TO ENGINEERS.—A new Work on the Marine Boilers of the United States, prepared from authentic Drawings and Illustrated by 70 Engravings—among which are those of the fastest and best steamers in the country—has just been published by B. H. BARTOL, Engineer, and is for sale at the stor of D. APPLETON & CO.,
1 12* 200 Broadway.

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SCIENTIFIC MUSEUM.

For the Scientific American.

Science and Philosophy.

Man is the interpreter of Nature: science is her language, and philosophy, the interpretation thereof. On observation and experience is built the whole superstructure of science; and, since facts constitute the foundation of correct theory, science must precede philosophy. It is the object of science to ascertain the constant conjunction of successive events, constituting the order of the universe; philosophy traces the necessary connections. Science records the phenomena which it exhibits to our observations, and refers them to general laws; philosophy investigates the nature of those efficient causes on which they depend. Newton's immortal discovery that the earth gravitates is only an addition to the mysterious gravitation of the apple, not an explanation; it is the generalization of a fact, not the discovery of an efficient cause. It is the province of science to state, of philosophy to explain; of the former to multiply and arrange phenomena, of the latter to draw conclusions; of one to give an account of things, of the other to account for them. A scientific man may be "undevout and mad," but a philosopher cannot. Mere science eclipses the Creator from the view of men; but a coalition always exists between true philosophy and religion. Were it not for philosophy, nature would only manifest herself, not her God. By it, the theater of nature is rendered more coherent, for it is the science of her connecting principles. Science may do without philosophy, but philosophy cannot exist without science. This idea forms the groundwork of Bacon's "Novum Organum," while the Aristotelians reasoned from causes to effects, and from generals to particulars. This great pioneer of nature demolished the old building of a false philosophy, and with the skill of a superior architect laid the foundation of another fabric, by which the genius of Newton ascended to the third heavens of truth, and in which the mind of Locke awoke to all its strength. But a counter revolution seems to be taking place at the present time. There is a rising tendency to revert from experiment to deduction; an effort is being made to move back those pillars which the mighty Hercules advanced. But rational inquiry can never proceed on any plan other than that of Bacon, for the inductive method is founded on the principles of human nature. J. W. O.

Balloon Excursion by Moonlight.

A recent Paris paper gives an entertaining log-book of an ærial voyage recently performed by M. Eugene Godard and half a dozen companions, on a brilliant moonlight night, M. Godard was endeavoring to demonstrate his ability to steer the atmospheric ship as conveniently as one riding on the water, and appears to have succeeded to a charm. He passed from one point of Paris and its environs to another, picking up his passengers, and stated, when he finally arose, to what points in the department he proposed to travel, and fulfilled his promises with wonderful exactness. When passing over Clichy, at an immense height, the scene is described as one of fairy-like beauty. The moon was on the horizon, the heavens entirely free from cloud or vapor, glittered with stars; and below, the different streets and boulevards of Paris were distinctly pourtrayed in long lines of light. At those *gonglia* of the city, the Place de la Concorde, the Palais National, &c., the effect of the gas lamps was to produce an atmosphere dazzlingly phosphorescent, and perfectly magical in its intense coloring; and the elevated towers of Notre Dame, the columns and domes, stood out in dark relief from the glaring ground. After voyaging for some hours, the balloon descended at Garges, and the party travelled cosily and safely upon terra firma back to the city.

Curiosities of Water.

The Edinburg Quarterly Review is the most able foreign Journal, scientifically devoted to reviewing works of science, especially chemical works. From it, we select the following beautiful extract on water:—

"Nor is the hailstone less soluble in earth than in air. Placed under a bell-glass with twice its weight of lime, it gradually melts and disappears; and there remain four parts instead of three, of perfectly dry earth under the glass. Of a plaster of Paris statue, weighing five pounds, more than one good pound is solidified water. Even the precious opal is but a mass of flint and water, combined in the proportion of nine grains of the earthly ingredient to one of the fluid. Of an acre of clay land a foot deep, weighing about one thousand two hundred tons, at least four hundred tons are water; and, even of the great mountain chains with which the globe is ribbed, many millions of tons are water solidified in earth.

Water, indeed, exists around us to an extent, and under the conditions which escape the notice of cursory observers. When the dyer buys of the dry salter one hundred pounds each of alum, carbonate of soda, and soap, he obtains, in exchange for his money, no less than forty-five pounds of water in the first lot, sixty-four pounds in the second, and a variable quantity, sometimes amounting to seventy-three and a half pounds, in the third. Even the transparent air we breathe contains, in ordinary weather, about five grains of water diffused through each cubic foot of its bulk, and this rarified water no more wets the air than the solidified water wets the lime or opal in which it is absorbed.

On Boilers.---No. 1.

We commence this week a series of articles on steam boilers. They will be illustrated by engravings and will continue throughout the greater part of this volume of the Scientific American. They will be found to possess a great deal of interest to many of our readers, and will present an amount of information on the subject not to be obtained in any other work of the kind. The information will be selected from various sources, Hebert, Armstrong, patents for improvements, in short, they will embrace a wide range of works, a little from one and a little from another, according as it is valuable, so as to present a vast and varied amount of useful matter on the subject, which will be kept for future reference by all interested in it.

The grand objects of a good steam boiler are economy of fuel, safety, and small expense for repairs. The boiler which can generate the greatest amount of steam with the least quantity of coal in a given time, is the best respecting its evaporative qualities, but there are so many qualities involved otherwise, that it is best to present the subject analytically and synthetically at the same time.

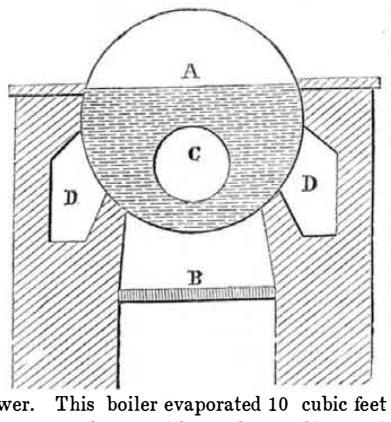
It was common to calculate the evaporation of a cubic foot of water per hour for a horse-power, and by Boulton and Watt's formula, 14 lbs. of English coal were allowed for the evaporation of a cubic foot of water. Nine square feet of boiler heating surface, and one square foot of fine grate surface were allowed for each horse-power.

The mechanical force of a cubic foot of water converted into steam is greater than this, and at the present day no such an amount of coal is consumed. A horse power is estimated at 33,000 lbs. lifted one foot high per minute, and whatever may be said by some engineers against estimating engines by *horse power*, it is absolutely necessary that there should be some unit of measure, and none is better than this one of Watt, for it was the result of actual experiments, and 33,000 lbs. lifted 1 foot high is equal to 150 lbs. raised 220 feet nigh in the same time, and this is divisable by six, the effective pressure per circular inch of steam at 8 lbs the square inch, and which is equal to a 40 horse-power engine of 25 circular inches for every horse power.

A cylinder then, of 5 inches diameter, (25 circular inches area) with an effective pressure of 5 lbs. and the piston travelling at 220 feet per minute, will give out one horse-power. This only refers to low pressure engines, but as the steam boiler is the magazine or source of the engine power, and the engine only the arms to work it, more will be learned about the boiler as we proceed.

The accompanying engraving, fig. 1, is an experimental cylindrical boiler employed by Armstrong. A is the boiler; B is the grate; C is the flue; D D are the return flues. This boiler is a kind commonly used in high pressure engines, the form being considered the strongest. The shell of this boiler was 5 feet diameter outside, and 9 feet long. The flue, C was 18 inches diameter, the fire grate was 3 feet 6 inches square (12½ square feet area), placed close to the boiler at one end. The flame or smoke after passing under the boiler bottom to the the back end, rises up, returns through the inside flue to the front above the fire door, where it divides itself into the two brick flues, D D, and passes along to the back end and up the chimney. This is the *split draft* boiler. Allowing 6 square feet of heating surface, for each horse power we have in this boiler, diameter of boiler, 5 feet, inside flue + 1½ length × 58·5 ÷ 6 = 9·75, gives 9 3-4 horse

Fig. 1.



power. This boiler evaporated 10 cubic feet of water per hour, with 13 lbs. of Liverpool coal, for each horse power. It was attached to a high pressure non-condensing engine, working with a pressure a little above 30 lbs. per square inch. The side heating surface, and the under heating surface are both put together as equal in point of effect for generating steam, but it is generally considered that the side surface is only about one half, as good as the under surface of a the boiler exposed to the direct fire action. It must be remembered that it is quite possible for an engine by bad packing, and bad exhaust of the valves, to eat up the profits of the best boilers. It has sometimes happened that the blame has been attached to the boiler, when it should have been to the engine, and there is much in the manner of firing the same fuel. A thin clean fire is the most economical. The above boiler worked an engine, the piston of which was not very well packed, hence the amount of fuel consumed. It is but a short boiler in proportion to its diameter, and when this is the case, it is best to have a central flue, but where there is room for a long narrow boiler, the central flue is not necessary.

Ice Cultivation.

A gentleman of Boston has adopted a system of ice culture, for the purpose of preserving that cooling substance early, or when the season is too mild to freeze over the deep water of the Fresh Ponds. His plan is to make an artificial pond, of an equal depth, and let the water into it as fast as it freezes. Workmen are now engaged in large numbers on the Fresh Pond Meadows, in preparing such a pond. It will cover about twenty-five acres of land, with a clay botton, and so much lower than Fresh Pond, that the water of the pond may be let into it in any quantity desirable. As this pond will be very shallow, it will freeze over readily, and it would seem must secure a crop of ice in the mildest of Boston winters. Of course it may be cropped as often as it can be frozen of sufficient thickness. The making of the pond, it is calculated, will cost about twenty-five thousand dollars, or one thousand dollars per acre, and the necessary buildings for storing the ice about as much more.

Cotton Mills.

The annual products of all the cotton mills in the United States, is stated to be 250,000,000 yards, and the consumption of cotton 600,000 bales; 100,000 bales of which are consumed south of the Potomac, and in the Western States. The value of the amount of cotton when manufactured, is supposed to be upwards of sixty-seven millions.

Wine of Wild Oranges

Orange wine is a new curiosity introduced in the New Orleans market. It is made of the juice of the wild or sour orange, which abounds in almost every plantation in the State, but has hitherto been regarded as a useless product.

There are fifty cotton mills in Russia, with 600,000 shuttles. In the whole of the Zollverein there are only 750,290 shuttles.

LITERARY NOTICES.

PUTNAM'S HOME CYCLOPEDIA, in six volumes, each complete in itself.—We have already called attention to volume 3, devoted to the useful arts. Volume 2 relates to General Literature and the Fine Arts, by Geo. Ripley and Bayard Taylor. The design of the compilers has been to furnish the reading community, and more especially the large class of students in our colleges and seminaries of learning, with a comprehensive hand-book or lexicon, of all branches of literature and art. It treats of painting, sculpture, architecture, theology, philosophy, criticism, &c:, in a concise and popular form, and several wood engravings have been introduced in illustration of different subjects. We find this work an important adjunct to our library, and we recommend it to our readers as a most useful and well arranged publication; pp. 650.

The publisher of the volumes which compose the "Home Cyclopedia" has been most fortunate in selecting authors competent in every way to carry out the objects embraced in the work. Vol. 5, by Parke Godwin, is a Universal Biography, more eleborate in detail than any similar work heretofore issued. It is invaluable as a work of reference, and the author and compiler has done the public much service by the faithful performance of a task so arduous. Pages over 800. Geo. P. Putnam, Broadway, N. Y., publisher.

DICTIONARY OF MEDICAL SCIENCE.—We have received a copy of the second edition of this great work by Robley Dunglison, M. D., Prof. of the Institute of Medicine, in Jefferson Medical College, Philadelphia, Pa. This Dictionary is an encyclopedia of medical information, and is essential to every man who wishes to be intelligent upon all subjects. Those who read medical works (and he who does not is a barbarian) cannot do so intelligently without a medical dictionary. A vast amount of useful information is conveyed in the brief definitions of Dr. Dunglison,—no other work contains the information embodied in this, not one. It is published by Blanchard & Lea and for sale by A. S. Barnes & Co., 51 John st., N. Y.

TRAUTWINE ON EXCAVATIONS AND EMBANKMENTS. By John C. Trautwine, C. E., Philadelphia.—This work is another leaf to the laurel of Mr. Trautwine, and is an accompaniment to his previous work on Railway curves. His book is a "Ready-Reckoner" for cuttings, &c.; tables for this purpose are prepared, and the method pursued is by diagrams, a plan which originated with him some years ago, but not till now made public. So far as we are enabled to judge from a brief examination of Mr. Trautwine's book, it appears to possess more practical interest to engineers, generally, than any treatise on the subject that we have ever seen. There is a simple candid clearness about Mr. Trautwine's writings, which pleases us. They evince a thorough reliable understanding of the subject upon which he is treating. The tables are prepared with scrupulous care and made *reliable*—something which cannot be said, we are sorry to say, of many works on engineering.

SCHNEIDER'S PRACTICAL ORGAN SCHOOL—Containing all necessary instructions in fingering, management of stops pedals, &c., together with a great variety of exercises, interludes, easy and difficult voluntaries, &c., to which is added a treatise on harmony and thorough bass, translated and adapted to the wants of young organists. Price $2,50: published by Oliver Ditson, Boston; for sale by Gould & Berry, Broadway, N. Y.

PETERSON'S LADIES' NATIONAL MAGAZINE for December, has a number of fine engravings. "The Rescue," is particularly well done. The contributions are choice and original. Dewitt & Davenport, Tribune Buildings, are agents.

TO MECHANICS,

Manufacturers, and Inventors.

SEVENTH VOLUME OF THE

SCIENTIFIC AMERICAN.

MESSRS. MUNN & CO.,

AMERICAN & FOREIGN PATENT AGENTS,

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